SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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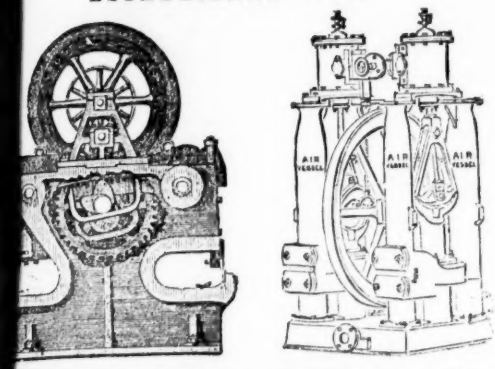

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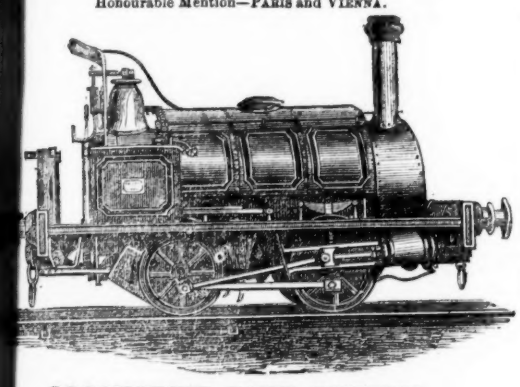

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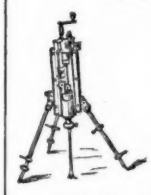

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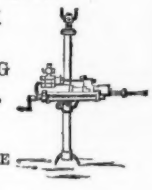

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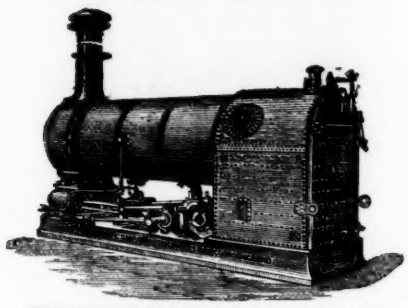

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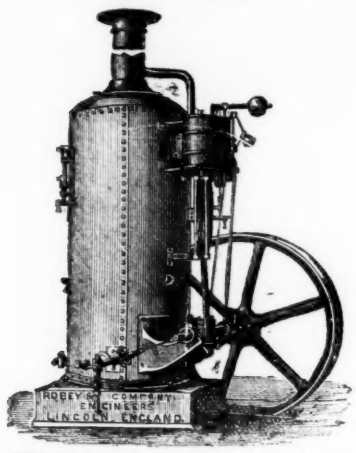

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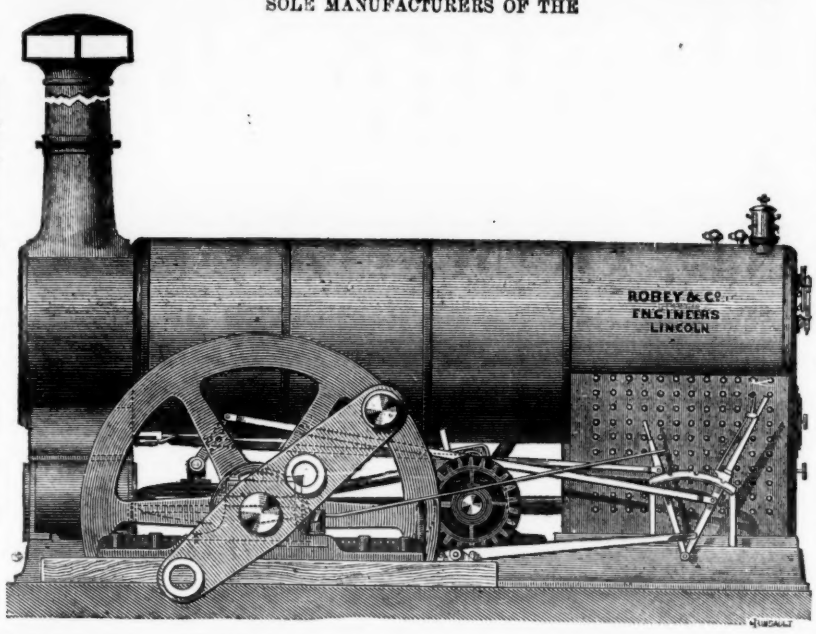

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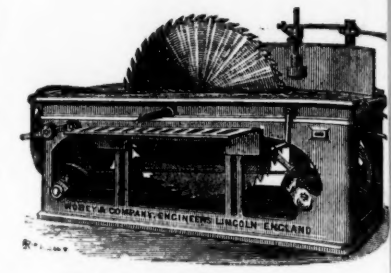

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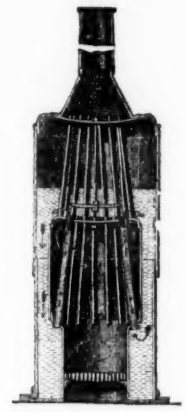

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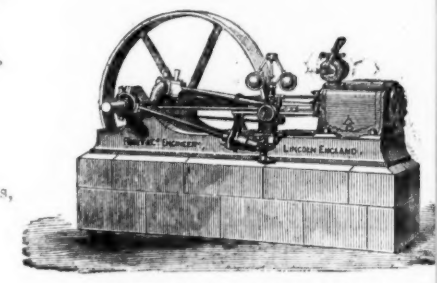

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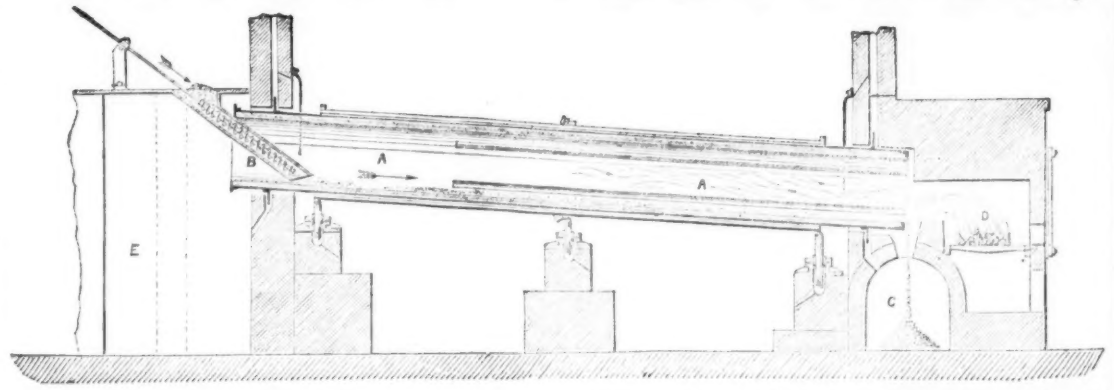

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RE-SCREENING, WASHING, AND COKING COAL.

A valuable and instructive lecture upon this subject was delivered on Monday evening at the Bristol Mining School by Mr. M. G. JOHNSON, manager of the Kingswood Collieries, and was attentively listened to by a large audience. There has, he remarked, never been a time during my recollection when the study and practice of economy was more needed than the present. This remark, I venture to say, will be found true with reference to every branch of industry, but in a very marked sense does it apply to the coal and iron trade of this country. Now, I understand economy to mean making the most of anything, or making as much as you can of anything and everything. What is the primary object of your studies, and, in fact, of all practical scientific research? Is it not economy? And you students who purpose making coal mining your profession want to know the best and most approved methods of winning and working coal. What materials are best suited for such and such work; the best form and shape these materials shall be to resist the strain placed upon them; the best protection you can give these materials from the deteriorating influence of other causes than the use to which you wish to apply them, such as the action of heat, damp, moisture, friction, and everything tending to undue wear and tear, waste, and decay. And you who are studying metallurgy want to know the latest improvements desired for reducing the ores, or obtaining the maximum amount of the metals contained in the ore for the minimum amount of cost at which they can be produced. You want to know how to determine what metal the ore contains, the quantity and quality of each, and how many it will pay to extract, and soon in all departments of industry. In these days of brisk competition economy must form the groundwork if you intend the undertaking to be a success.

There is no branch of business that I know requiring more constant, careful, and vigilant supervision than mining. All other branches I am aware require well looking after to make the concern successful, but in a colliery where (say) 85 per cent. of your workpeople are employed underground, far down in the bowels of the earth, where darkness reigns supreme, save what light you may get from a flickering candle, or still more dim "Davy" or "Clanny" lamp, only those who are experienced in the matter can tell how the necessary repairs get imperfectly done and neglected, and how little work is often got for the money paid.

It is undoubtedly in the mine where economy should begin. I do not mean that you should stint the supply of materials, such as timber, rails, ropes, oil, grease, packing, friction rollers, &c, of proper ventilation; this by the way should be your first aim. You can do everything with it—nothing without it. Neither must you allow your roads to get into bad order, or your roadways to be neglected so that your trams of coal may jam in the sides, or worse still your horses get crippled, the skin rubbed from their backs and hips, the harness gets broken and torn to pieces by low roads. If you use horses at all keep roads high enough and wide enough for them to travel in with some degree of comfort, but I look forward to the time, and I think it not far distant, when horses underground will be a thing of the past, for machinery, with light improved steel ropes, actuated by compressed air will, I firmly believe, be the horses of the future. I reckon every horse in a mine costs from 100*l.* to 120*l.* per annum, taking into consideration food, attendance, driving, harness, wear and tear of horse flesh, veterinary assistance, &c., to say nothing of the stables, and ill effects upon ventilation. Perhaps at some future time, if I may be allowed the opportunity, I will give you my views more fully of economy in the mine, but for the present I purpose directing your attention to the outside.

The latter part of the year 1872, the year of 1873, and earlier part of 1874, I have no doubt may be most vividly recalled to the minds of all present. From certain causes, which I will not stop now to consider, the demand for coal went up, and as a natural consequence the prices went up also, but the supply not keeping pace with the demand a panic in the coal market was the result. Many people got alarmed, and thought our coal fields were being rapidly exhausted, and that we should all very soon be left in the cold, or have to migrate to a warmer clime. This fear so far prevailed that a commission was appointed by Government to enquire into the matter, large consumers of coal and men of genius set their brains to work to invent ways and means, mechanical appliances, &c., to get the maximum amount of heat or useful effect out of the coals they had to pay so dearly for, or what appeared to be dear when compared with prices paid prior to 1872, or compared with those of the present time. When the supply of any article far exceeds the demand prices at once assume a downward tendency, and when an article which is used so largely and in such bulk as coal becomes cheap extravagance is often the result.

I unhesitatingly say that we have far too many collieries open. I find that from June, 1873, to June, 1874, there were no less than 254 collieries, new and old, opened.

A great many of these were old collieries that had been abandoned through being too expensive to work when ordinary prices ruled, and thus an enormous amount of capital has been flittered away; for before the water has been pumped out, and likewise before the pits are down and coal won, the mirrage, the phantom, has passed away, and, like the baseless fabric of a vision, leaves nought but discontented and, in many instances I fear, ruined shareholders behind.

To work a colliery successfully and safely it should be worked regularly, a coal mine is not an ordinary workshop, where if trade be slack you may stop your engine, cease to work your lathes, put the fire out from your furnaces, and lock up the big doors, with only, perhaps, the watchman to pay; but at a colliery you have an expensive staff of overmen and horses underground to be fed and attended to, water to pump, the everlasting creep, squeeze, and crush, timbers to be renewed, air-ways to be kept open to keep your ventilation right, and a host of other casualties too numerous to mention; this being the case, and as the article in question is now got at so great a risk to life and limb, it becomes our duty as producers to make the most we possibly can of it after it is gotten.

After being brought to bank and weighed the coal is usually separated into two kinds, called large and small, and screening seems to be universally adopted, though different forms of screens are used. The screen with "Billy Fairplay" attached is that most commonly used in Wales; the bars are placed about $1\frac{3}{8}$ in. apart. The coal being very hard yields large blocks, and in both the anthracite and steam coal collieries the small, or slack, is thought of so little value that the men are only paid for large coal, and all the small that passes through the screen drops into a box now popularly known as "Billy Fairplay," is weighed, and this weight is deducted from the gross weight of coal sent.

"Billy Fairplay" is nothing more than an iron box, usually of a capacity of about 10 cwts., and its length equal to the width of the screens, suspended by two iron rods (one at each end), so that it shall hang immediately underneath the screen. Shoots are placed to catch the small coal after it has passed through the screen to direct it into this box. The cross beam to which the suspension rods are attached is connected to a Salter's spring-balance, and the coal is thus weighed. A trap-door situated at the bottom of the box is then opened, and the coal falls into a truck, or any other vessel placed underneath to receive it.

The "Billy Fairplay" is in use at some collieries in this district; with this difference that instead of deducting, and paying nothing for it, it is simply weighed to ascertain the quantity sent, which is paid for, though at a lower price. Thus by paying a higher price for large coal the workmen have an inducement for the exercise of skill in producing the coal as large as possible. Hicks's patent screen is intended to remedy one of the evils incident to the ordinary method of screening—that of reducing the breakage of the coal during that operation to a minimum.

It consists of a series of elliptical hollow bars placed side by side, and made to revolve the same way, the lesser diameter of one bar being placed in a direct line with the greater diameter of the next to it, and of such a distance apart as the mesh may be required, thus preserving a uniform distance during the entire revolution. The object of using elliptical bars being that while the coal is being gently lifted by the revolving bars to facilitate screening the large coal being so moved will slide down much more easily, thus permitting a lower angle at which the screen may be fixed. This lowering of the angle will give you more wagon room without having to raise your pit bank. When three sizes of coal are required the upper part of the bars are made larger than the lower part, thereby giving a finer mesh.

As a rule bituminous coal being softer than the steam coal or the anthracite, and the yield of small being in inverse proportion to its hardness, the bituminous coal often yields 50 per cent. of small; now, this class of coal is the best for coking, and the small would be as good as the large if it could be kept clean. The small coal if kept clean is chemically and intrinsically equal in value to large coal as a fuel, and the only difference is the mechanical condition in which it is found, Where the small is allowed to be sent out, shovels are used for filling it up, and very often, wittingly or unwittingly, rubbish and shale get filled up with the coal, and so render it unfit for the very purpose it seems specially designed for. Such being the case, it becomes necessary to separate, as far as possible, this rubbish and shale from the coal, and this has and is being effected by washing, and I would here remark that one of the very best preliminaries to your washing machine is a sharp supervision by your overmen, who can prevent a great deal of the rubbish, &c., being sent out from the mine. Prior to washing, and where a screen is used of a large mesh—say, of $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in.—re-screening may be resorted to with advantage, as a very good nut coal may be obtained, and which should command nearly as good a price as your large coal. The methods of doing this may in a great measure be modified by existing arrangements; for instance, if you have an arrangement already for screening sufficiently small for coking, you have only to take it in the best way you can direct to your washing machine, but at many collieries no such thing appears to have been contemplated, and you have to make your re-screening a separate affair. There are often advantages of situation and position which if thoroughly realised will aid you materially in your working cost, a point not to be lost sight of. At Kingswood we have just erected a re-screening, washing, and coking plant, and I think we shall by this means be able as far as possible to avail ourselves of the natural advantages at our disposal. The most original method of coal washing, and which is still in use in Lancashire and South Yorkshire, is the sloping trough arrangement.

This arrangement consists of a trough made of wood, from 3 ft. to 4 ft. wide, about 1 ft deep, length from 200 to 500 ft. It is fixed at an inclination which may be varied, according to the differences existing between the specific gravity of the metallic and other impurities and the coal. The required length of the trough would depend very much upon this also. The greater the difference between the specific gravities so much shorter would be the required length of the trough, and higher may be the inclination, and *vice versa*. So that under the former conditions the operation could be carried on with greater celerity. The coal dust is passed direct from the screen or otherwise on to this trough, and a large and constant stream of water is caused to flow down simultaneously, carrying the coal dust along. At distances varying from 10 to 30 ft. steps or traps about 3 or 4 in. high are placed across the bottom of the trough to intercept the pyrites, shale, &c., which by their superior gravity find their way to the floor of the trough, and when these traps get filled up a slide or door immediately underneath is opened, and the impurities drop out. What passes No. 1 trap may be caught at No. 2, or No. 3, and so on, until by the time the coal dust reaches the bottom it is tolerably pure. The coal is then caught in small wagons or trams at the bottom of the inclined trough, with perforated bottoms, to let out as much of the water as possible. The water, containing some of the purest of the coal, is then passed on through drains to catch-tanks, 20 or 30 ft. square, and 4 ft. deep, where a portion of the dust is deposited. The overflow flows away to a second, third, or fourth tank, until, in fact, very little of the coal remains in suspension. The tanks are so arranged that the stream flowing in can at any time be cut off, to admit of the coal being cleared out and taken to the coke ovens. The idea of washing coal in this manner seems to have been borrowed from Devonshire, where they wash the kaolin, or porcelain clay, in this way. At different stages up the trough or shoot they take out clay of different qualities; every stage nearer the bottom marks a degree of superior quality, the very best and purest being that at the bottom.

Messrs. Green and Bell's apparatus is a trough, with a breakwater and a door hinged at the bottom end of the trough, over the refuse hole. A series of rakes are worked by a crank and a connecting-rod from any motive power. The dams and rakes are lifted by a handle and bellcranks, the fulcrums of the latter being supported from spars. The coals to be washed are put into the hopper, the door is opened to admit the coals into the trough, and at the same time water is let in by opening the cock, the water carrying the coals along the troughs. The coal (being lighter than the pyrites, shales, and stones), assisted by the action of the rakes, is carried along the spout, over the dams, and finally over the end of the spout into coal wagons. The pyrites and foreign bodies of greater specific gravity than the coal are obstructed by the dams, and when these are silted up by accumulations of dirt the coal is shut off, the rakes are thrown out of gear by a handle lifting the connect-rod from off the pin or lever of rocking shaft, the dams, the rakes, and refuse door being lifted simultaneously by the handle and bellcranks, the water washes down the trough all the foreign matter, which falls through the refuse hole into the wagons. The bottom of the coal and refuse spouts are provided with wire gauze to allow the water to pass into the outlet.

Mr. Morrison's coal-washing machine consists of a cistern made of cast-iron, about 5 ft. long and 3 ft. 6 in. wide. At the back end of a cistern is a cylinder connected at the bottom to the inside of the cistern, and in which a piston works. A vertical reciprocating motion is imparted to the piston by a crank driven from the main shaft by the pulley. The front end of the cistern is lowest, and to it is fitted a spout for conveying the wash slack to wagons. Towards the top of the cistern is fixed a false bottom, composed of a perforated copper plate, secured to a cast-iron grate to give it strength. The false bottom is stopped short a few inches from the front end of the cistern, where a plate resting on the false bottom, extending from side to side of the vessel, and capable of being lifted by a handle, slides against the dam or slope. The water to the machine is supplied by a pipe and cock, and meets the coal to be washed as it descends from the spout.

The cistern being filled with water, and the material to be washed resting on the perforated false bottom, the reciprocating action of the piston in the cylinder forces the water through perforations in the false bottom, causing the heavier particles to descend to the lower parts of the mass. The coal remaining at the top is carried over the front end of the vessel and down the spout. The dirt on the false bottom, after accumulating to a certain thickness, is allowed to fall into the bottom of the cistern by raising at intervals the plate or slide. The bottom of the cistern is fitted with a slide, which is opened occasionally, when the dirt is allowed to drop out upon the ground, to be filled into wagons and conveyed to the dirt tip.

The Kingswood machine is a double Morrison, with this addition—that instead of the dirt that falls to the bottom of the cistern being allowed to drop out upon the ground it is lifted by elevations to a convenient part at the side of the machine, where a wagon can be placed to receive it. This is to obviate the application of manual labour for filling it up into the wagons. The principal objection to this machine consists in the intermittent action of the piston. While the downstroke forces the water up through the perforated plates, and causes the material that is to be washed to be held in suspension, so that the substance of the lighter specific gravity may be floated away, the upstroke creates a vacuum, and this brings the material down on the plate again. If a continual upward force was applied the machine would do double the amount of work. I shall accomplish this in a measure by shortening the stroke of the piston, or running them at a high speed where available. I think water supplied through a series of small pipes from a good head would obviate the use of pistons, but more water would be required.

Some experiments made at Clay Cross by Mr. Howe show the advantage of using the same water over again. Washing without centrifugal pump, and allowing water to run away, 1000 tons of small slack were delivered on washing vessels, and the results were—washed slack, 834 tons; dirt, 98 tons; coal dust in clearing ponds, 68 tons = 1000 tons. Washing and pumping waste water immediately on to washing vessels, 1000 tons of small slack were delivered on washing vessels, and the results were—washed slack, 891 tons; dirt, 98 tons; coal dust in clearing ponds, 11 tons = 1000 tons. The cost of washed slack, when all waste water was allowed to run away, was—small slack delivered on hopper, 1000 tons at 5*s.* per ton, 250*l.*; cost of all labour in washing, 9*l.* 5*s.*; fuel, 16 tons at 5*s.*, 4*l.*; stores and repairs, 2*l.* = 265*l.* 5*s.* So that the cost per ton on 834 tons of clean slack was 6*s.* 4·33*d.* The cost of washed slack when water was used over and over again, and none allowed to run away, was—small slack delivered on hopper, 1000 tons at 5*s.* per ton, 250*l.*; cost of all labour, 10*l.* 12*s.* 6*d.*; fuel, 20 tons at 5*s.*, 5*l.*; stores and repairs, 3*l.* = 268*l.* 12*s.* 6*d.* So that the cost per ton on 981 tons of clean slack was but 6*s.* 0·35*d.*

COKING.—Although coke was not used for the reducing of iron ores until the year 1713, I have no doubt but that coal was coked many years anterior to that date. Mr. A. Darby, ancestor—I believe great-grandfather—of Mr. Abram Darby, founder of the Ebbw Vale Ironworks, was the first to use coke for the smelting of iron ore at the Coalbrookdale Works, in Shropshire. It is worthy of note, too, that this same Mr. Darby made his first start as an iron founder in Bristol. The iron crocks with three legs, so common in Wales—being generally used by the poorer classes for making "cawl" or broth in—were originally made in Holland, and the manufacture of which was for a long time a secret. Mr. Darby, being an enterprising young man, went over to Holland, entered a foundry there as an ordinary labourer, made the best use of his time and his eyes, had evidently studied the art of observation, and knew how to apply it—an art, by the way, I would advise all of you to cultivate. He then returned to England and to Bristol, and established a foundry at Baptist Mills, which he worked successfully for producing them. In 1709 he left Baptist Mills and went to Coalbrookdale.

In the early days of coking the coal underwent the process of carbonisation in large open mounds, and I believe up to the present day, in some parts of Wales and Staffordshire, the method is still carried on, the only advantage claimed for this process being that no expensive structures are requisite, and the surface of the ground requires but little preparation. On the other hand, it has the disadvantage of necessitating the use of bituminous coal, and a great portion of which has to be lumps; the coke, too, varies very much in quality—density—and the yield is comparatively small. In well constructed ovens coal produces from 72 to 78 per cent. of coke, but in the mounds I have just spoken of 60 per cent. would be considered a fair average, without taking into consideration the disagreeable fumes and the most objectionable smoke that is constantly hanging about in the vicinity of these mounds; this method would only be justifiable where building material was high and coal exceedingly cheap. We are very much behind the Belgians in these matters, or, rather, we have not given so much thought and time to the study of it as they have. It has been truly said that often "our wants are our blessings," and that "necessity is the mother of invention," and these sayings are verified in the case of the Belgians. Their coal mines are the deepest, the inclination of their seams the steepest, their coals are the softest, yielding on an average not more than 40 per cent. of large, and in many mines not more than 30 per cent. What, then, is to be done with the 60 or 70 per cent. of small? Why, a great portion of it has to be made into coke or patent fuel. Their mines being deep, and the area of their coal field limited, and fearfully contorted, they want to bring up all the coal from the seam they have sunk so far for; besides, the inclination of their seams being so steep, they cannot pack their gobs or goaves so tightly as they could if the seams were flatter, and hence it is with great difficulty and expense that they can pack or bury the rubbish that has to be got down in roadmaking, or that which comes down over the coal, therefore they prefer sending small coal to bank than such a quantity of rubbish to get rid of the packing, and it was for this cause, having such vast quantities of small coal which they could not dispose of as such, that made them set their heads to work to devise methods of putting it into a saleable shape, and thus have surpassed us in the appliances for coal washing and coking in large quantities.

It is not cheaper labour and longer hours of work only that enable the Belgians to compete with us so successfully in the matter of finished iron, even when they get the pig-iron from England. I believe a great deal is due to the fact that they convert their small coal into coke much—very much—cheaper than we do. Now, coke being absolutely necessary in the manufacture of iron, we must give the matter more attention than we have hitherto been giving to it before we can expect to drive the Belgians from our home market. Do they compete with us at home? Yes. In our own neighbourhood, not ten miles from the city of Bristol, a gentleman wanted some iron girders for roofing his mill, and his lowest quotations delivered were from Belgians. So with the bridge over the Severn at Sharpness Point. I could give you many instances, but let these suffice. It is not my province here to tell you why coke is required and why it is so essential for ironmaking purposes, but, such being the case, we will consider next what points are to be considered in its conversion from raw coal, and these are to get a good coke and to get a good yield from it, and to obtain these points at the lowest possible cost. A good coke depends very much upon its uniformity, solidity, and purity. Uniformity, again, depends in a great measure on the dimensions of your oven. The solidity depends principally on the previous crushing, and on the height of the "charge" in the ovens. And the purity is assured by carefully washing out all extraneous matter.

Next comes the economy of labour, and if this is not attended to you may get a good coke and a good yield, but at such a price that would render the operations unremunerative. Some saving is effected by having the top of your ovens on a level with the tramway for bringing the coal from your washing machine, and so loading your ovens from the top through the bottom of the said trams, allowing gravity to do this part of the work, instead of the old method of charging through the doorways; this old method not only involved more labour, but the length of time taken up in the operation causes a great loss of heat in your oven, and then it would necessarily require a much longer time before the next charge would get properly lighted up. We have adopted this improved plan at Kingswood, and so arranged it that the bottoms of the ovens are on a level with the tops of the railway wagons.

DIFFERENT SORTS OF OVENS.—The oven most popular in England is that commonly called the Beehive, although there are in existence many others of different shapes and sizes, each having its partizans claiming some special advantage, and thinking their oven the best. Now, they may all be right to a certain extent, for I believe that different kinds of coal require, or will admit of, different treatment, and again for the purposes for which the coke is to be used. On the Continent the Smet system, largely worked at Seraing, at Sir J. Cockerill's works; it is an oven with two doors and a mechanical ram (the latter being universally used in Belgium). The dimensions are—length 23 ft., 2 ft. $1\frac{1}{2}$ in. wide, height 5 ft. 3 in.; charge about 5 to $5\frac{1}{2}$ tons. The coal is introduced through two hoppers. The flame from a working oven penetrates into openings at the basis of the arch, and follows two horizontal flues, then it circulates under the sole in the channels, and from thence reaches the chimney. Then there are the Dulait ovens, these are considered superior to the Smet; this system allows of the extinction of any portion of the group of ovens, while the remainder are in full operation.

There is, again, the Appolt system. The principal feature of this system is the facilities by which the charging and emptying is carried on. In describing this system Mr. Aug. Gillon, Professor at the School of Mines, Liége, says:—An Appolt group comprises 12, 18, or 24 retorts, ranged in two lines. Each retort is from 13 ft. to 16 ft. high. To facilitate the exit of coke the retorts are made to taper, so that at the top they measure 3 ft. 8 in. by 1 ft. 2 in., and

at the bottom 4 ft. 1½ in. by 1 ft. 6 in. The bottom of the retort is closed during the coking by a sliding door. The charge is made first at the upper aperture with coke dust, with which a bed about 1 ft. thick is formed. The charging wagon is then brought over the mouth of the retort, and the load is emptied. The mouth is closed with bricks and luted with clay, so that the charge is hermetically sealed. By the heat applied at the sides the gases are distilled, and escape by a small opening 6 in. wide by ¾ of an inch high, and placed 1 ft. 3 in. from the bottom. The gases are discharged into an annular space around the compartment in which they are burnt, with air introduced through openings in the furnace. The heat developed by their combustion effects the carbonisation of the coal. The products of combustion reach the chimney by means of 12 horizontal channels, fitted with valves, and arranged in such a manner as to distribute the heat equally over the whole group.

In order to strengthen and consolidate the structure the compartments are united by bricks, which fill up the space between the two ovens. Between the bases which support the whole there are two galleries, with rails for the discharge wagons. To discharge the retorts the door is opened, and the cake of coke falls into a wagon lined with fire-bricks. The coke is then well quenched with water. The advantages which have been sought for in this construction are: The carbonisation is effected in a close chamber solely by the combustion of gas disengaged from the coal, a condition favourable to a high yield; the heating surface is very considerable, reaching 240 square yards for a charge of 1½ ton; the comparatively small size of the retort secures a rapid and regular carbonisation; the flames from all the compartments uniting in a common chamber which surrounds them insure a uniformity of temperature; the vertical position of the compartments, besides the facility for rapid charging and emptying, gives more compactness to the coke, whilst the arrangement occupies less space. The inconveniences incident to the system are:—If the general arrangement does not allow of the coal being led out direct upon the loading platform lifts must be provided to raise it; masses sometimes adhere to the sides of the retort, which have to be broken by bars before the coke can fall; the management of these ovens is not so simple as in some other systems, and when repairs are required for one compartment the whole group has to be stopped.

Next comes the Coppee system. The principles on which Mr. Coppee's coke oven is designed have for their aim the retention (as coke) of as large a proportion of the carbon in the coal as possible. The utilisation of the heat of the gases given off by the use of flues arranged to maintain a high temperature, and applied in such contiguity to the oven itself as to hasten by imparting an intense heat to the inside of the oven, the expulsion of the gases. As a secondary, but consequent, consideration the application of the heat retained by the gases when they leave the stack of ovens to the production of steam. The ovens have each the form of a parallelogram, the usual dimensions being in length 29 ft. 6 in.; breadth, 1 ft. 6 in.; height, 4 ft.; these are charged with coals every 24 hours. When built to be drawn every 48 hours the ovens have the same length, but are built 5 ft 7 in. high and 24 in. broad; the thickness of the brickwork between the ovens is 13·2 in.

The coals, whether washed or otherwise, are crushed or disintegrated before being placed in the oven to the consistency of very coarse meal. At each end of the oven are two metal doors moving on hinges, and fixed securely in metal frames, the lower door being 3 ft. and the upper 1 ft. in height.

For further details of this system I must refer you to Mr. Bainbridge's paper, as it would be utterly impossible in a single lecture to give you the details of all the different systems. In the summer of 1875 the writer accompanied Mr. Handel Cossham on a tour through some of the coke-making districts of the North, with a view of obtaining information respecting the best and most profitable methods of coking, and the result of our enquiries generally may be summed up as follows:—

That under general circumstances the old common round or "Beehive" was the best. That it should not exceed 11 feet in diameter, or 8 feet 6 inches high. It is obvious that, as in the common oven the process of burning takes place downwards, it is essential that the dome should be low. That the cooling of the coke was better effected, with less injurious effects to the coke, by "throwing" the water on with buckets, than by using the "hose." An old and experienced coker said that after using the hose for a length of time he had laid it aside and resorted to the bucket, because he found by experience that the "flop" of the water from the bucket expelled the sulphur more effectually, and he got a much brighter and drier coke.* Coke is an exceedingly hygroscopic substance, and has increased in weight over 50 per cent. in a single night by the absorption of water, and when the water is supplied with the hose, unless very great care is taken the coke gets saturated, entailing evils of the first magnitude in economical working of the furnace. The yield of coke from a given weight of coal depends mainly—assuming the process to be properly conducted—on the original amount of carbon. Coal containing the greatest amount of carbon, and the least amount of sulphur and ash, you will always find the best for the purposes of coking.

It has occurred to me during my investigations of the different kinds of ovens that have been brought forward to supersede the old "Beehive" that "quality" has been rather lost sight of in the attempt to produce quantity. The round oven, too, possesses the following advantages:—It affords the least possible side coke; the greatest concentration of heat; the least tendency to wear itself out by contraction and expansion from the frequent cooling and reheating; the first cost is so much less; by the extreme simplicity of their construction the expense of keeping them in repair must be less than those of such an elaborate character. Various processes have been tried for desulphurising the coke. By chemical processes attempts have been made to expel the effects of the noxious elements in a state of gas, and again to add to the coals neutralising agents. Then, again, the coke has been treated by steam. Washed with hydrochloric acid, saturated with oxygen, and many other methods; but, although each promoter of the different processes professes to have obtained the object sought after, yet in each case the expense incurred rendered them impracticable. At Kingswood we are building our ovens in blocks of 24, and placed in double rows, back to back, with the chimney in the centre—*i.e.*, 12 on each side. The ovens will be charged with the dust coal at the top, and the waste gases will be carried off to the chimney by a flue running centrally between the rows of ovens. The ovens are being built of the Beehive type, the dimensions being as follows:—Diameter of oven inside, 11 ft.; height to apex of crown, 8 ft. 6 in.; doorways, 3 ft. 6 in. wide, and 4 ft. 6 in. outside; charging holes, 1 ft. 10 in. by 1 ft. 4 in.; centre flue, 2 ft. by 2 ft.; square chimney, 50 ft. high, 11 ft. 6 in. outside measurement at base, by 6 ft. 8 in. inside. Batter 0·4 in. to the foot; number of bricks, 49,500. The cost of this class of work differs very much. It will depend greatly upon the locality, price of bricks, and distance of haulage of materials.

To solve the problem—Will it pay? In considering the production of any article requires a deal of thought. You must look at the subject in all its phases, taking first the cost of the raw material, afterwards the expense to be incurred in producing the finished article. Then, on the other hand, you have to ascertain what you can get for it, the probabilities of obtaining sales, and to what extent. These and many other things should be carefully considered and duly weighed before embarking in any industry—at any rate to any large extent; but those who produce an article that is wanted of a good quality have ten chances to one of succeeding in selling it over those who turn out large quantities of an inferior description. That is a very good motto which says "That which is worth doing at all is worth doing well," and again "Soon enough done that which is well done." And let this be your firm resolve, that whatever you set yourselves to do be determined to do it well first, and you will easily learn to do it quickly. Science is now making such rapid strides, and the pursuers are so many, that those who would keep in the front rank must not allow the grass to grow under their feet, and you have in this school, with such a master at its head, advantages for training for this race second to no other school of the kind in the kingdom, and if you do not grasp at these advantages and profit by them the fault lies at your own door.

* The manager of Messrs. Pease, of Darlington, reports that "after trying every kind of oven, and every system of coke manufacture, they have come back to the 'Beehive' ovens." Messrs Pease are among the largest coke manufacturers in the North of England.

THE METAL MARKET—FORCED SALES OF COPPER.

SIR,—In the Remarks on the Metal Market, under date of 19th inst., the Auctions of Copper are alluded to as being "forced sales." Permit us to observe that such a description is entirely erroneous, and, moreover, calculated to mislead your readers, the epithet "forced" being customarily applied only to cases where goods are pressed for sale through the inability of owners to find sufficient money to meet their engagements.

As selling brokers of the larger portion of the metal offered, we must positively deny the existence of any such cause, and, as far as the Wallaroo Company are concerned, may adduce in proof thereof the fact that they have refused an offer for the purchase of the whole of their make for the present year on ordinary cash terms.

Austinfriars, Jan. 20. —— JAMES AND SHAKSPEARE.

OUR FOREIGN COMMERCE IN THE SUPERIOR METALS FOR 1876.

SIR,—In answer to the letter of Messrs. French and Smith, in last week's Journal, I have to say that I professed only to base my remarks on our commerce in the superior metals upon the returns of the Board of Trade. I always admitted in such articles that these returns were only approximately correct, and if not correct I could not be responsible for the fact. I also repeatedly pointed out in such articles that the quantities and values changed in different proportions.

My article did not propose to show the stocks in hand of any metal, nor the state of the home market. The article which appeared in the Journal the week before showing the Board of Trade Returns for eleven months of the year, was not written by me, as I had written on that subject an article which appeared in the Journal a month before, giving the same figures.

According to the Board of Trade Returns (see Table II.), whatever the actual fact may be, no foreign lead or spelter were exported. The table referred to professes to give, on the authority of the Custom House officials, the values and quantities of all foreign and colonial produce exported, and not an ounce of lead or zinc is so reported in its columns. THE WRITER OF THE ARTICLE.

METROPOLITAN PATENT FUEL COMPANY.

SIR,—In last week's Journal you kindly published the first part of the report of the Chairman, at their meeting on Dec. 19. I beg now to solicit space for the second part of the Chairman's address, which I hope you will find interesting for your readers:—

The CHAIRMAN said—continuing his remarks:—The strange fatality which has followed shipments of coal from the South Welsh ports points to its peculiar liability to such catastrophes as explosions and spontaneous combustion; and if, whenever a ship is lost from spontaneous combustion or fire at sea, a particular mine should be indicated as that which supplied the coal either for cargo or ship's use, that mine would acquire an unenviable notoriety, and render ships so freighted or supplied liable to higher insurance, as well as prevent them from being resorted to for passengers or shipments of goods. But it was observed that there is no instance on record of a fire at sea where the cargo or ship's bunkers were supplied by patent fuel, and for this reason a cargo of coal may take fire at sea from two different chemical phenomena—explosion and spontaneous combustion. The first cause is due to the liberation or evolution of carburretted hydrogen gas, which is contained in the cells of coal, and allowed a free escape by breaking or trituration, fills the holds or bunkers in which it is stowed, and explodes on the approach of a naked light, as in the case of the Atalanta, of Cardiff, and the steamer Prussia, of the Allan line, lately reported by the daily papers. The second cause of fire at sea is brought about through the coal taking fire spontaneously when it has been shipped in a wet state, contains iron pyrites, or is so porous that it absorbs easily atmospheric oxygen, and is thereby slowly but surely oxidised, and finally set on fire. [*Vide* the Report of the Royal Commission on Spontaneous Combustion on board Coal-laden Ships.] To neither of these two dangers is patent fuel, properly made, liable, and this may be easily understood when it is known that before being agglomerated the coal is crushed thoroughly, and thereby all gases are liberated, and also that no wet coal can be made into fuel. Again, the very fact that patent fuel is strongly compressed precludes the possibility of its being porous. Thus it may be seen that the most fruitful sources of danger are eliminated by the manufacture of coal into fuel, nor does the primary coal lose anything of its heat-giving power since the gases evolved do give but a very low caloric through their being evolved too quickly when heat is applied. Here, then, there is a remedy against the ruin which many of the most valuable steam coals would be exposed to if Parliament, having regard to the safety of life and property at sea, were to legislate against the use of any of them for passenger ships. Nor would this entail any hardship, seeing that the fuel is improved for steam purposes by the process, its compression renders it more available for stowage, its non-liability to breakage by attrition of ships, &c., which is so damaging to coal on long voyages, and the concentration of power conferred, more than compensate for the cost of conversion into fuel, and render the small coal as available for the purpose as the large. These interesting facts are deserving of the consideration of all coalowners, shipowners, and others concerned in sea-faring business; they and all those consuming coal for steam purposes might do well also, from an economical point of view, to take the example of most of the continental railways and lines of steamers, such as the Northern Railway, the Western Line, &c., of France, the well known Messageries, Maratime, and Transatlantic Companies, the railways of Spain, Italy, and Algeria. It may be argued by some that in those countries they use patent fuel because, not producing coal so extensively as England, they are bound to utilise every particle of their available combustible, and cannot afford waste. This very argument, should it be put forward, is all in favour of patent fuel, for said a great thinker—"The true power of a nation is the economy of its power, and the power of England is her coal." There is no better way of economising that power than by using patent fuel, as shown by the conclusion of the Chairman's remarks, and the report of trial he read to the shareholders. In conclusion, he added that the fuel was highly approved for home consumption by judges of its good qualities—that Mr. T. R. Huntley, of Greenwich, for instance, one of the most respectable, wealthy, and extensive coal merchants in the vicinity of London, was so satisfied of the value of this fuel that he had introduced it largely, and the satisfaction expressed by the consumers, and the results of their experiments, had placed this fuel in a position of great superiority, so that no doubt could exist as to the excellence of the process used by the Metropolitan Patent Fuel Company. He (the Chairman) then read the following report, just received by Mr. Huntley; and here I beg to notice that this gentleman is a complete stranger to the Metropolitan Patent Fuel Company:— *South Metropolitan School, Sutton, Surrey, Dec.* 28, 1876.

To Mr. T. R. HUNTLEY, Greenwich.—DEAR SIR: I have much pleasure in forwarding you the result of certain experiments we have made here with the Patent Fuel you have recommended for our adoption. We have had it in use for some weeks, and after a very careful test the following is the result of two weeks' work:—

First week	North Country Coal	Tons 5 16
Second week	Metropolitan Patent Fuel	3 0

In addition to this saving in weight and cost of fuel, the following additional advantages would still further reduce the outlay:—

1.—The ash is reduced to a minimum.

2.—The smoke, often a great nuisance, in spite of patent doors, &c., is very considerably lessened.

3.—As the Patent Fuel requires little or no stoking, there is a saving of quite 50 per cent. in labour.

You are at liberty to make any use you please of this letter.

Countersigned—W. J. SONE, Engineer. THOMAS HALES, Superintendent.

I may add here that, as one of the administrators of the South Metropolitan Schools, Mr. T. R. Huntley well deserves the thanks of the metropolitan ratepayers by his introducing the Metropolitan Patent Fuel there, as thereby some hundreds of pounds will be yearly saved through his foresight and public spirit. A. VASSARI.

Old Vicarage House, Greenwich, Jan. 24.

COTTON POWDER, COMMONLY KNOWN AS TONITE, OR SAFETY BLASTING POWDER.

SIR,—The statements of "Miner" on this subject, in last week's Journal, are calculated to mislead. That the letter in question is a most unmistakable "puff" it is easy to see, and it would be but fair if you declined to insert such letters unless paid for as advertisements. For blasting in coal mines it remains to be shown that tonite is safer than any other explosive—for (it is to be presumed) it is the "flash" from the ignition of the charge which is the "source of danger"—and this tonite is not free from. The "sulphurous fumes" given off by powder are not "unhealthy." Miner says "Tonite is free from smoke and smell." This is doubtful, especially as regards the smell; but in a "confined place" the gases evolved by combustion, although not so visible as powder smoke, must be present, and recently reported cases tend to show that these gases are not harmless. POWDER.

AUSTRALIAN TIN.

SIR,—The working of tin continues to attract a large amount of attention in Australasia. Both in Tasmania and in Australia, properly so called, the amount of tin ore which awaits utilisation would seem to be very considerable, although of course time, capital, and labour are all required to ensure its being turned to good and profitable account. In New South Wales the progress of the Vegetable Creek Tin Mines has attracted considerable notice. The Great Britain Mine embraces 620 acres of land, which have been converted into a mineral conditional purchase; this valuable property is situated at the head of Vegetable Creek, and tin mining is being carried on upon the property on a large scale under the management of Mr. W. H. Wesley; at the last dates 150 men and 30 horses were employed on the estate, and in October, 1876, some 60 tons of ore were raised. Messrs. Moore and Speare's claim is one of the richest on the creek, and it consists of about 200 acres of mineral purchased land, of which only about 12 acres are worked out. This mine from the time it was started until the close of 1875 was worked under the management of Mr. Speare, now of the Elsmore Tin Mine; during this time it returned about 900 tons of tin ore, at an average cost of about 20*l.* per ton. As regards Tasmania the Mount Bischoff Company is the only one which can be said to be really doing very much, but the prospects of this undertaking are said to be encouraging. The mining manager, Mr. Kayser, appears to be giving satisfaction, and his monthly yields are steadily increasing. In reporting for October, Mr. Kayser states that 14 sluices were kept at work nearly all the month. The return for the month was as follows:—In bags, 10 cwts. 3 qrs.; slime, 44 tons 18 cwts.; fine ore, 138 tons 0 cwt. 0 qr. 10 lbs.; coarse, 130 tons 13 cwts. 0 qrs. 8 lbs.; nuggets, 100 tons 6 cwts.; on floor, 15 tons; in paddock 5 tons: total, 479 tons 7 cwts. 3 qrs. 18 lbs. The yield for the month was 90 cwts. 5 qrs. 4 lbs. Numerous tin mines on the east and north-east coasts of Tasmania are being worked with various success, the most remunerative being those in the hands of co-operative associations. The most prominent are the Full Moon, the All Nations, the Union, and the Black Boy, but several others are yielding handsome and many fair returns. Now that a road has been made from Ringarooma port up to Upper Ringarooma a large trade is springing up at that port, and during October 2485 bags of ore were shipped there for Launceston. In October the total quantity of ore received in Launceston from the east and north-east coast of Tasmania was 4311 bags, about 210 tons, and other shipments were daily expected. Besides this nearly 100 tons were shipped at George's Bay for Hobart Town, and were sent from thence to Sydney, New South Wales. The smelting works of the Mount Bischoff Company have not been idle; two furnaces have, indeed, been steadily employed, and the company hopes before long to have four constantly at work. The prices paid for purchased ore, the last quotations for tin in London being 73*l.* per ton, were for 73 per cent. ore 43*l.* 7*s.*; for 74 per cent. ore, 44*l.* 0*s.* 7*d.*; and for 75 per cent. ore (and 75 per cent. is the highest return yet obtained from any Tasmanian tin), 44*l.* 1*s.* 9*d.* per ton. During October the Mount Bischoff Company held a public sale of smelted tin, with the view of creating a local market, but only 10 tons were sold at the sale at 67*l.* per ton, although 100 tons were afterwards taken at that price by Mr. Edgell, agent for Messrs. H. Beit and Co., of Sydney.

What will be the effect of Australasian tin mining operations upon the general production of tin throughout the world? At present it is difficult to say whether it will exert any influence upon prices. It may possibly do so some day; but, as has been before observed, time, labour, and capital are all required to produce such a result.

READER.

SCIENCE IN ITS APPLICATION TO MINING.

SIR,—Under this heading Mr. Knapp, of the Llanrwst Lead Mines, writes at some length in the Journal of Dec. 30, but does not believe in the training of mine agents in chemical laboratories, but to make them chemists without would be to disregard the maxim that "a little knowledge is a dangerous thing." Mr. Knapp has truly said that a little knowledge is a dangerous thing, and which he has himself fully illustrated by writing on a subject of which he appears to have very little knowledge indeed. He goes on to ask "shareholders in mines if, when visiting them, they would be pleased to find their chief agent in a little pent-up room, in his shirt sleeves, surrounded with phials and test-tubes, with the numerous necessary reagents—liquid and otherwise—engaged in analysing mineral substances?" As every educated man will admit chemistry is a beautiful and instructive science, I do not think there is anything degrading in becoming proficient in analyses even for so exalted a personage as a chief mine agent. I do not think, moreover, that shareholders in mines, as a rule, are so partial to kid-glove gentlemen as Mr. Knapp may imagine, but would prefer finding their chief agent (when visiting the mine) assaying, or otherwise engaged in serving the interests of the company. And if a mine agent is too good to take off his coat and assay his ores once or twice a month I would look on that man as too big for his shoes, and, moreover, if he is too good for that branch of his business, he would also be found too good to perform the more ordinary and laborious duties of an agent, such as descending ladders, examining pitwork, shafts, levels, stulls, stopes, &c., and often getting drenched through with dirty water in performance of the same. Mr. Knapp also tells us he had "a complete apparatus when abroad for the reduction of all kinds of minerals, metallic and otherwise, and found frequent use for them;" but he does not need it in directing the operations of a lead mine at home, and goes on to say "It is immaterial to me, to my purpose, to my interests, and to my object whether the baryta is in combination with calcite or, *vice versa*, the calcite with the baryta, as we have not the latter in saleable quantities, and the former, of course, is of no value; nor is it material to the productiveness of the lodes, each separately, or one without the other, would be just as well."

Mr. Knapp's attempt at writing on practical and scientific matters, as here indicated, I consider a complete failure, as he overlooks the fact that calcite is a softer substance than baryta, and consequently a gangue of calcite will be more easily and cheaply worked than a gangue of baryta. Calcite is also a very much lighter substance than baryta, and will not cost nearly so much to separate from the ores, so that a veinstone of calcite is at any time to be preferred to baryta, as the mine can be developed much faster and cheaper when the gangue is calcite than if it were baryta, and the dressing expenses will be also very much less. For instance, the hardness of calcite is usually 3, while that of baryta is 3·5, consequently a gangue of calcite is more easily and cheaply worked than a gangue of baryta, provided the conditions are similar in both cases with regard to the containing rock walls of lode, &c. Again, the specific gravity of calcite is about 2·7, while that of baryta is 4·5, which fact shows that calcite can be readily and cheaply separated from so ponderous an ore as galena, whose specific gravity is 7·5, while it requires much more expense and labour to separate it from baryta; therefore a gangue of calcite is to be preferred to a gangue of baryta

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in lead mines, even though the latter may be found in saleable quantities—that is, unless the mines are in the immediate vicinity of a baryta market.

A little knowledge is truly a dangerous thing, and a smattering of blow-pipe analysis and assaying does not qualify a man to write on scientific subjects, nor yet come up to the mark of the requirements of a practical and scientific mine agent. JUSTICIA.

Portugal, Jan. 19.

THE RICHMOND MINE—MESSRS. F. W. MANSELL AND CO.

SIR,—Thanks to your courtesy, the columns of the Journal have been opened to our communications for a period approaching 2½ years; during that long time we have never put forward one statement without attaching our names thereto. Unhappily, there are others who, cowardly hiding behind anonymous signatures, hesitate not to put forth statements maliciously untruthful, and intentionally misrepresent facts known only to certain members of the Richmond board of directors. Such transparent devices frustrate their own ends, as events already sufficiently demonstrate. As stated last week, our duty is to keep our clients fully acquainted with every item of information that comes to our knowledge; our duty we shall continue fearlessly to discharge.

F. W. MANSELL AND CO.
(Sworn Stock and Share Brokers).

Palmerston Buildings, Old Broad-street.

THE RICHMOND MINE—MESSRS. F. W. MANSELL AND CO.

SIR,—As one of those "poor souls" described last week by "A Shareholder," I am not of that devoted sheep-like multitude who "only cut their own throats" if they do not place unheard-of confidence in the board. As such, I was advised to realise when the shares were between 8*l.* and 9*l.* But for counsel to the contrary I should have re-purchased upon perusing the communication which appeared in the Journal from "An Old and Large Shareholder," who gave us a list of brilliant prospects, and could not understand why the shares were so low as 9*l.*! One is sorely tempted to enquire the psychological *status* of that "Old and Large Shareholder" now the shares can be purchased at 6*l.*, and have been to 5*l.* "True, 'tis pity; pity 'tis 'tis true!"

"A Shareholder's" letter reminds one very much of the castle scene in the "Legend of Montrose," where the Duke of Argyle, disguised as a turnkey, endeavours to elicit information from the veteran trooper, Dugald Dalgetty, when that worthy is so struck by the confident manner in which the disguised nobleman assures him of the Duke's innermost sentiments, that throwing himself suddenly upon him, he exclaims, "You must be the Duke himself!" *Qui facit per alios, facit per se.*

Jan. 24. ONE OF MANSELL AND CO.'S "POOR SOULS."

RICHMOND CONSOLIDATED MINING COMPANY.

SIR,—Your correspondent, "Audi Alteram Partem," seems to have small confidence in the management of this mine, and I must confess that my confidence, like that of a large number of shareholders, has come down to the lowest point. The policy of the directors appears to be one of concealment, and especially so of our Vice-Chairman, who seems to lose no opportunity in endeavouring to promote this object. Why is this? I find an opinion becoming very prevalent that some at least of the officials job in the shares of the company, and this appears to them a sufficient explanation of this policy of concealment. Be this, however, as it may, it certainly does appear a gross absurdity to have several highly paid directors in London who must, from the nature of things, be next to useless in managing a complicated concern like this on the other side of the Atlantic. They must get all their information second-hand, and in almost all cases two or three weeks after the event. What is wanted is a well-paid, honest, and competent director on the spot, and a couple of honest directors in London. The present system I consider is simply ridiculous. I do not go to the office now for information, as I find what is vouchsafed is useless, or worse. I should suggest an unofficial meeting of shareholders as early as convenient to devise some plan for the improvement of the management of the concern.—*Jan. 25.* COMMON SENSE.

RICHMOND MINING COMPANY.

SIR,—I observe that notice has been taken in several of to-day's papers of the circular issued on the 23d inst. by the directors of the Richmond Company, explanatory of the injunction lately obtained by the Eureka against their company. The Daily Telegraph, in its Money Article, says—"The Richmond has now worked outside the original patents, and while not crossing this boundary between the two points named, it does cross the line drawn in continuation of the boundary." Now, as this reference to the dispute between the Richmond and Eureka is sufficiently puzzling to those even who are thoroughly acquainted with the affairs of the Richmond, I am quite certain it is far beyond the comprehension of the uninitiated, who are the majority, and therefore it is that I address you, in order to throw a little light upon the darkness in which lurk (ready to take advantage of their victims) the "bears" and their confederates in this country and beyond the "big pond."

The directors' circular is clear and to the point, which is just what the Daily Telegraph's remarks are not. That the Richmond Company has been working in ground outside their original patents there is no attempt at denying, nor yet any necessity for denying. But upon what ground has it encroached—upon land owned by the Eureka, K. K., or any other company? Assuredly not; but upon unallotted Government land! And it was just in order to prevent any "loafer" locating a claim and bringing an action, such as the Eureka and K. K. have so unjustly brought, that Mr. Probert had applied according to the provisions of the U.S. law for the patents of the four lots of unallotted ground into one of which their workings had extended.

I am not acquainted with the author of the remarks in the Daily Telegraph, but if the writer cares, like your correspondent, to call upon the Chairman of the Richmond Company, from whom he will receive the greatest civility, and will but ask to be allowed to see the very excellent map showing the Richmond, Eureka, and adjacent mining lots (a map received long before the present dispute arose), he will see what the merits of the case are exactly, and he will probably be surprised to learn that a private property named the "Utah" intervenes between the Eureka and the four plots the Richmond has applied for; while the "Pacific," a property which the Richmond acquired some time ago by purchase, lies between these lots and the K. K.!

In making their iniquitous claim to the coveted lots then, the Eureka and K. K. ignore entirely the fact of these two lots separating them from the ground being worked and applied for by the Richmond. They ignore, too, the law of the country, which permits an individual or company to follow a true lode which it has struck in its own ground wherever it leads, and which law, in case of their being no person already in possession of the surface of the ground into which the operations have been carried, gives that company or person on application a prior title to the patent of that surface ground.

Now since, as I have shown, the Eureka in order to carry out its idea of extending the north and south line indefinitely would have to step over the south-west corner of the Utah (which company, were the Eureka to try to run its workings through its ground, would at once take out an injunction against the Eureka), it will be seen how outrageous is their contention, and only equalled in its outrageousness by the rumour set afloat by the hungry "bears" to the effect that the Eureka intends presently to bring a claim of 40,000*l.* against the Richmond for the ore taken out of that portion of the workings lying to the eastward of the desired "continuation of the north and south line."

For the consolation and information of—not the "bears," for they do not care to know it, but of the interested public and shareholders generally, let me further state that before any party can make good a claim to a distant lode, as the Eureka is at present doing, it is necessary for that party to show that they possess the true lode or "fissure vein" (even bed vein, remember, will not do) in their property, and that they have followed it up to the point claimed, and that such being the existing law, the existing position of the Eureka and K. K. in this dispute is simply and positively this—that they are on no lode leading in the direction of the ground claimed, for our captain and manager have been down in their workings and report this, and that although they have tried all they can to find a vein that would suit their purpose they have been able to do nothing except waste their money in vainly boring through the hard band of limestone rock which separates them from their land of promise.—*London, Jan. 25.* A SHAREHOLDER.

RICHMOND MINING COMPANY.

SIR,—I am one of those who have been advised by Messrs. F. W Mansell and Co. in all my transactions in Richmond shares, and by their advice I sold my interest on the 1st of last month at 9*l.* 12*s.* 6*d.* per share. I certainly agree with your correspondent in last week's Journal who states that the directors of the Richmond Company have been guilty of a great neglect of duty, as the litigation must have been known to them many weeks since. Not a word was said about this serious matter until some days after the issue of Messrs. Mansell and Co.'s circular; even then it seems the London office sent out a telegram which proves to be contrary to the fact. Well may your correspondent say that the directors are much to blame, and deserve a vote of censure for keeping back facts which they should have communicated to the shareholders. Between the time the knowledge of the commencement of this litigation was known to the directors, and the date when they issued their circular, the quotation had fallen more than 2*l.* per share. Who in the meantime were the sellers? The shareholders had a right to know, and should insist upon a full investigation of this matter, which can only be done by an examination of this transfer ledger of the company. [I enclose my card.] NOT A SHAREHOLDER.

Jan. 24.

RICHMOND MINING COMPANY.

SIR,—Now the cause of the sudden depreciation in the shares of the above company is known—a depreciation certainly not warranted by the telegram in to-day's paper—it is at once perceived how a mountain is made out of a molehill. As during the last week rumours of the most startling character have been circulated by those whose sole object was, doubtless, to depress the shares for their own sinister purposes, I would suggest, in order to prevent *bona fide* holders from needlessly sacrificing their shares, that in future any information received from the mine, whether of a favourable or unfavourable nature, be at once made known. Few shareholders have time to call at the company's office, and a line or two in the *Mining Journal* would greatly reassure A TIMID HOLDER.

London, Jan. 25.

FLAGSTAFF MINING COMPANY.

SIR,—As one who attended the important and successful little meeting held at Cannon-street Hotel, on Monday, I must express myself pleased beyond anything I anticipated as regards the facts elicited touching the company's present position and prospects. But I must, however, signify my strong dissent, not only as regards the abrupt and uncalled-for assertion on the part of the Chairman that Prof. Vincent was "a poor negociator," but at the feeble way generally in which he treated, or rather alluded to, the great labour and sacrifice that Prof. Vincent has been (to my personal knowledge) constantly undergoing since February last; and, though the observation complained of was followed up by a recognition of the Professor's ability as a geologist, and specific mention was made of the complete and satisfactory manner in which he inspected and mapped out the mine last spring, still the remark was, in my opinion, most unfortunate and misplaced. The mild and indulgent remarks made by the Professor on the Chairman taking his seat clearly proved to my mind that he—whether a good "negociator" or not—is at least a charitable and high-toned gentleman. I enclose my card.

Jan. 25. A LARGE SHAREHOLDER.

FLAGSTAFF MINING COMPANY.

SIR,—I attended a meeting on Monday last of the principal shareholders in the Flagstaff Mining Company, and listened to a statement by the Chairman of the action pursued by the board of directors during the past year. Their efforts, as is well known, have resulted in securing to the shareholders possession of their property, so long sequestered, and the Chairman dwelt with pardonable pride upon the result, the credit for which, however, in his remarks, he seemed to me to ascribe to certain individuals of the board whom he particularised. I have no desire to detract from the praise due to any member of the board, but it is clear to me that the Chairman failed signally in his address to recognise the services of one of his fellow directors, who has spent at least equally with those particularised by the Chairman, time and money in furthering the plans for regaining the company's property. I refer to Prof. Vincent, who during the past year, as I have reason to know, made a professional visit to the mine in April, purely on the company's business, making most careful assays, explorations, plan, and report concerning the property, and again visited New York in November last, consulting there with capable legal advisers, at the wish of the board, with a view of aggressive proceedings against Mr. Davis.

The aggressive proceedings adopted had the entire support of Prof. Vincent, as he stated before the meeting, the primary negociations which the Professor conducted with the view of making an amicable arrangement having been influenced solely by the then condition of the company, which lacked funds to prosecute hostile measures. The policy of attempting again an amicable arrangement was, moreover, a continuation of the policy inaugurated by a previous board. In the discharge of these varied labours, without pay from the company, Prof. Vincent made a great sacrifice of professional effort, of time, and of money. His services are, I think, deserving of recognition from the shareholders of the company, and I venture to ask the indulgence of your columns to make known these circumstances, in order that he may receive the large share of credit due to him in the recovery of the property. A SHAREHOLDER.

FLAGSTAFF MINING COMPANY.

SIR,—I was one who attended the meeting of large shareholders in the Flagstaff Silver Mining Company, held at Cannon-street Hotel, on Monday, Mr. W. C. Harvey in the chair. I was gratified to find that at last we have good grounds to hope for the long-looked-for better days, but I must own that I was much disappointed to hear the Chairman speak with such want of appreciation of Professor Vincent's recent efforts, as to my knowledge the Professor has done much of late towards bringing about a better state of things for the Flagstaff Company. I have known Professor Vincent for nearly 20 years, and having secured his services on many occasions, I am in a position to state that he is not only an able geologist and metallurgist—remarkably correct in his judgment of mines—but also (notwithstanding the ill-timed verdict of the Chairman) a most excellent "negociator," and I must say that I consider the observation made was not only in bad taste on the part of Mr. Harvey, but most unjust, as I am aware that the Professor has devoted much of his valuable time and energies—in fact, the last twelve months—in endeavouring to regain for the company possession of its property. This object the Professor evidently set out to achieve, by peaceable means if possible, but by forcible steps if necessary, and if found practicable, and since the abandonment of negociations with Mr. Davis he has (as he reminded the Chairman at the meeting) supported him and Mr. Hunter by every means in his power.

It occurs to me as only fair to state in this connection that Prof. Vincent made his trips to Paris and Utah last February and April, as well as worked up his elaborate report and plan of the mine without remuneration, and not only was his recent trip to New York also without pay, but on the day of his departure on the latter voyage (as I happen to know) he actually handed the board 50*l.* towards helping them to tide over difficulties during his absence. It is likewise not only just but important to state that on both his journeys to America the Professor took out with him an "A. B. C." case (as he reminded Mr. Harvey at the meeting) written out by the Chairman himself, which he (the Professor) submitted to eminent counsel in the United States (with a view to aggressive steps against Mr. Davis), the opinion of which counsel he straightway communicated to Mr. Harvey on his return to England. If I understood Prof. Vincent rightly at the meeting, all the opinions of counsel obtained by him in America were decidedly adverse to Mr. Davis, or, in other words, in perfect harmony with his (the Professor's) own views, and those of Mr. Harvey. Several months ago the Professor stated to me that so perfectly satisfied was he that Mr. Davis had no legal foundation for his claims, that had the company been in possession of sufficient funds to wage war against him he would never have thought of approaching Mr. Davis with a view to amicable arrangement (though others had already done so), as such a step would almost necessarily result in concessions, which in strict justice to the company he felt should not be submitted to. My object in writing is to place Prof. Vincent in a proper light before the body of shareholders, as now that our prospects are so encouraging I think it only right that those to whom we are indebted should have credit for the services they have rendered.

Jan. 25. A SHAREHOLDER.

FLAGSTAFF MINING COMPANY.

SIR,—Having attended the meeting of the principal shareholders on Monday, I was surprised that the Chairman did not put before the meeting with more prominence the merits due to Prof. Vincent for his known efforts on behalf of the company for the past year, as he has sacrificed his time and much professional labour without, as I understood, any remuneration, the only moneys received by him being simply in respect to travelling expenses. I trust when the general meeting is called that the shareholders will not overlook Prof. Vincent's just deserts in respect to bringing the affairs of the company to such a successful issue. In conclusion, I must congratulate the absent shareholders on the response accorded by the few present to the call for financial assistance; the subscribed amount being sufficient to clear off every indebtedness on this side of the Atlantic, and affording a margin beyond to carry on the company for some months in the future. A LARGE SHAREHOLDER.

FLAGSTAFF SILVER MINING COMPANY.

SIR,—I was very pleased to read in last week's Journal that the reports I had heard in the previous week of the greatly improved prospects of our company were likely to be more than realised, but with the "saving clause," so necessary in all joint-stock enterprises, especially of this character, that "it be properly managed." That this has not hitherto been the good fortune of this company no one can for a moment doubt who, like myself, bought shares at a very high premium, and saw them dwindle to 90 per cent. discount, which I attribute solely to bad management; and I am by no means assured that our prospects have much, if at all, improved in this respect, and if the shareholders wish to secure the full benefit which now appears within their reach they must infuse new blood into the board, and that of a very different sort from that which characterises its present members.

Ever since the passing of the Limited Liability Act an unfortunate mania has pervaded thousands of persons who, unable to prove their fitness for any other occupation, satisfy themselves (but no one else) that they are quite fit to be directors of a public company (as long as there are large fees), whether promoted for scientific purposes, or to work mines at the Antipodes, or make a railway to the moon. Look at the hundreds of thousands who have been utterly ruined by falling into such hands, and let us take warning in time; but we have very little to spare!

I was invited to attend a meeting of some of the shareholders on Monday last, and although very much pressed by several to be present, I was, unfortunately, unable to do so. I regretted this the more when I heard of what took place at the meeting, which appeared to have convinced everybody present of the utter unfitness of the Chairman for the post into which he has been thrust. It appears there are only four directors altogether, and although I am no advocate for a large number of directors, I think that those who are selected should be well paid, if they possess any real fitness for the place. and this is specially the case in a Chairman who, from all I can learn, in this particular instance is exactly the reverse. We are fortunate in having one good director in Professor Vincent, who is most valuable from his practical mining knowledge, and more particularly for the local experience he has obtained in having twice visited the mines themselves; but one good man is of comparatively little use by himself, and it ought to be the first and immediate object of the shareholders to provide fellow-directors for him who shall also possess their confidence. Let this be done without delay, and we shall soon be receiving as large dividends as we ever did, and without any fear of their falling off.—*Jan. 25.* AN INDEPENDENT SHAREHOLDER.

FLAGSTAFF MINING COMPANY.

SIR,—Let shareholders beware—the market is "rigged." It behoves us to be cautious, and ward off the onslaught. Certain parties have bought shares largely, and it is to their interest to puff the mine and so run up the shares, and then unload them on the unsuspecting public. It was to their interest also to subscribe liberally towards the fund required to repay the debts in London so as to keep the company on its legs long enough for them to make a handsome profit out of their speculation. Notwithstanding, the directors only get some 2200*l.* or so towards the 3000*l.* which was absolutely required to prevent bankruptcy. We do not yet know the amount of debts contracted in Utah by the late manager. Mr. Hunter puts it at 30,000*l.*; he represents Davis as being completely worsted, and as having no money wherewith to press his claims, notwithstanding his having been for three years in possession of the Flagstaff, which Mr. Hunter says turns out a net profit of 50,000*l.* a year. He puts the mine as being worth 400,000*l.* With Mr. Hunter everything bears a golden prospect; he has a lease of the mine, and being impecunious draws money from the board. Shareholders are as much at his mercy as they were at Mr. Davis's. The directors say that they are quite satisfied with his antecedents, but do not tell the shareholders what these antecedents are. The directors are honest in everything they say or do, but they are entirely dependent on Mr. Hunter for their information. History tells us how tortuous has been the life of the Flagstaff Mine, and history is known to repeat itself; so let us be on our guard and avoid being the victims of Stock Exchange manœuvres.

Jan. 22. ORIGINAL SHAREHOLDER.

MINE AGENTS.

SIR,—With your permission I will write a word or two in reply to "Live and let Live" and "R. S." both of whom set up a feeble defence against the inroads of science. "Live and let Live" need not be afraid that because a mine agent is a man who properly understands his business assayers, diallers, and engineers will find nothing to do; on the contrary, if we had more good agents we would have more good mines, and in large and paying mines, where the agents would have plenty of other work to attend to, assayers and diallers would be required; but be it known that the mine agent should, properly speaking, understand all the work of those beneath him, so as to see that everything is carried out in a proper and efficient manner. According to Mr. R. Symons, of Truro City, there was only one man in Breage on Dec. 16, 1689, who understood the science of shooting the rock, yet since that time shooting the rock has given employment to millions of people in Cornwall alone. If "Live and let Live" is so liberal to mine carpenters going abroad why does he not complain of such men getting but 4*l.* at present in Cornwall.

It is a very poor argument against science which "R. S." sets up by endeavouring to show that education tends to make men dishonest; on the contrary, you will find as a rule well qualified men very exact and careful of their reputation; and the solitary instance of dishonesty he quotes was, he also admits, the work of a pretender, who was ignorant to such a degree that he did not know a lode. Allow me to tell "R. S." professions of knowledge count for nothing without the proofs, and if the parties gulled in Cornwall were to properly test the qualifications of the agent at the outset

they would not have suffered the loss named. Such mines as Carn Brea, Tincroft, Cook's Kitchen, Dolcoath, &c., which "R. S." puts forward as instances of good management without science are, extraordinary instances of rich mines, and their success due in a greater degree to their great productiveness, and not so much to the skill of their agents, as any understanding miner when he hits on immense masses of mineral could make the mines pay well, and hence arose the saying "Good mines make good men." JUSTICIA.

Portugal, Jan. 19.

WEST CHIVERTON MINE.

SIR,—In the present excessively depressed state of mining it is very satisfactory to hear of dividends, and as the executive of this "venture" claim for themselves great credit for the satisfactory state of the concern they represent it to be in, and for their superior skill for bringing it into that desirable position, it may not be amiss just to look at the real position of the undertaking, and then the public will be better able to form a correct opinion of the property; and in laying before your numerous readers what I believe to be the true state of the mine, I will begin at the beginning, by showing the circumstances as they appear.

About two years ago a mine captain and mine engineer were sent to report on the property, engines, machinery, and general state of the concern. I believe the substance of their report was, as regards the engines, machinery, plant, pitwork, &c., that they were in a very inefficient state, and that the mine generally was managed badly. A short time after this, this captain and engineer were appointed captain and engineer of this property. They are stated to have put the engines, plant, machinery, pitwork, &c, in thorough repair, besides erecting new machinery. What deserves particular notice in connection with this section of the property is this—to transform such extensive mining plant, engines, pitwork, &c., as those of West Chiverton from a bad state of repair to that of a good one must require a large amount of money. The paltry sums reported by the executive to have been spent for this purpose prove, it is submitted, to a demonstration that either the machinery, &c., were not in such bad condition as represented, or that it is not now in so good condition as stated. For this reason—it is impossible that the diminutive amount represented to have been expended in putting them in good repair could do it.

About the representation of the greatly improved mining applied during the last two years, it is well known there were far superior agents, as to abilities practically, engaged there before the change took place; and since the present executive have ceased not to put forth in public statements calculated to damage the practical mining skill of their predecessor, with the view it is presumed of lifting themselves in the estimation of the public, it may not be amiss just to look at what claims they have for so doing. Circumstances independent of any operations at the mine seem to have been the salvation of the concern, or the present management would have been nowhere. The present managers entered with reserves of blende of great extent, high and dry, which the advance in price of that mineral made available to the amount of 50,000*l.*, deduct 30,000*l.* for raising and preparing it for the market, it leaves net... ... £20,000

Reduction in price of labour for last two years	6,000
Ditto, coals	2,400
Iron	1,000
Sundries...	500
Total	£29,900

Now, Sir, this is a very moderate estimate of the difference in the favour of the mine for the last two years, consequent on prices, and when it is understood that this important amount has been thrown into the scale independently of operations or skill in working the mine, the question forces itself on the mind of any practical mine manager or business man that such a weight in the scale in addition to the "represented improvements and superior skill" applied should have resulted in dividends of far greater amount than those made. With these facts and representations it will be a very difficult matter to persuade anyone who is really a judge of the question that any superior management has been applied. But, on the other hand, there would be little difficulty in showing that very defective management has been carried out. At all events, this is the natural inference deducible from the representations put forth to the public. If this is a sample of superior management it is to be hoped that Cornish mines will not be blessed with much of it. Representations and facts do not seem to harmonise in this concern. And further, respecting the dividends that have lately been made—if the labourers had not been pinched above measure still less money would have been distributed among the shareholders. I would add no account was taken for those large reserves of blende ore by the former agents in calculating the reserves, as the price of the ore was so low that no profits could be made from it. OBSERVER.

THE LLAN GAN LEAD MINE.

SIR,—Being a reader of the *Mining Journal* for many years, I am always glad to see any reference made to a really important discovery either at home or abroad, but more particularly in new mining undertakings within our reach, where there is not much difficulty to see and be satisfied for ourselves. About three weeks since I observed a correspondent had written you on the above mine, which I passed over as I had many times before done on reading reports referring to new things, which might or might not be of much worth after all. Your following issue, however, brought apparently a very honest and straightforward letter from the secretary (Mr. George King Patten), confirming what the previous writer had said generally, and also an account of the formation of the company, &c., which looked to me so much like thorough business on the right principle, and considering the reported discoveries, and being at Cardiff staying for a short time, I decided to see the mine before returning home. Accordingly one fine morning I started for L'antrissant, thence to Cowbridge, and away across the country, until at last I arrived at the mine. I need not dwell here to repeat what your previous correspondents have already done, suffice it to say that it did not require much time in observation to confirm what I had before read of the undertaking, but I must confess I was surprised that a mine to every appearance with so much wealth discovered should be at work almost close to our doors, and not that I remember referred to before in your valuable Journal until some time in last December, and I can only account for it in the fact that, like most other good things, and in a few hands, they choosed to keep it there, and are content to wait quietly and reap the abundant harvest before them.

I have thought what a contrast most mines now-a-days, with one-fourth of the discoveries here made would be lauded to the sky, brokers would be at work in every direction, shares would change hands at high premiums, and fortunes made of it even before the machinery got into operation. Here there appears to be nothing of the sort; very little is said about the mine; no puffing reports appear from week to week; the brokers' circulars, as far as I have been able to discover, do not contain the name of Llan Gan, nor do I yet see the company have troubled themselves or you to give it a place in the list of mines in the *Mining Journal*. I consider all this, Mr. Editor, a substantial proof of the satisfaction and confidence they have in their property; for, perhaps, under less favourable circumstances they, as well as others, might not think it amiss to give it an airing on the housetop.

I had no intention to write a report when I began this letter, and will leave it for those officially employed, notwithstanding I can scarcely close my remarks without writing a word or two on the character of the lodes. On looking over the heaps of lead ore on the surface (some of it several hundredweights in a lump), my thoughts were soon carried away to some of those fine old Flint-shire mines which proved the richest lead mines in England, yielding millions profit. The formation and composition are precisely the same; the lodes are very large, and near each other for economical working, and all lead-producing. The finest pile of leadstuff I ever saw from a new mine at the same depth may now be seen at surface here from Wright's shaft, and to those who never saw the opening of a new mine on mineral, and know not what surface indications are that precedes the opening of rich mines, I recommend them to look at this, and particularly if they are engaged in similar pursuits, it will well pay for so doing. The company's engine and crusher will soon be at work, and the only delay I see will be in laying down dressing-floors and machinery fast enough to take away the large quantities of ore that must follow; this, however, is a pleasing circumstance, and can speedily be put right. I look forward to this becoming one of the best lead-producing mines in Wales, and shall not be surprised should it prove to be the greatest.

Leeds, Jan. 22. W. P. RICKARD.

MONYDD GORDDU MINING COMPANY.

SIR,—This mine is now opening most satisfactorily, especially the south lode. There is every probability of meeting with a continuation of the great deposits of lead discovered near the surface in the western ground, where attention is now directed. In the 12 west, on the south lode, they appear to have entered a great course of mineral; the lode at present looks splendid, and I have no doubt, if the manager can go ahead as he wishes with the work suggested in his report for the meeting just past, he will bring the mine from paying costs to more than doing so before the end of the present year—in fact, from my own knowledge of the merits of the property, and the faithful care taken of everything locally, I feel certain nothing is wanted to accomplish a dividend position but to give the agent full power to open the ground with all speed. I hear the Monydd Gorddu agent has an extensive sett on the same run of lode as that mine to the east, and had found some magnificent silver-lead ore near the surface in a very fine looking lode; but he cannot sink on it, the water being too powerful.

JOHN JONES.

NORTH LAXEY MINE.

SIR,—I am glad to see that North Laxey appears to be again coming into notice, and I sincerely hope the expectation of a "Shareholder" in last week's Journal that we have a second Great Laxey may be realised. I should like, however, to suggest to the agents the advisability of making their weekly reports somewhat more definite. For instance, Mr. Rowe, in his report of the 16th inst., stated that a rise from the 60, which was only about 3 fms. from the 50, had been commenced, and a cross-cut commenced in the 40 to prove whether the lode had gone off to the west; and, further, that he did not expect the 60 rise to hole into the 50, and in that case they would have to cross-cut from the 50; but he does not give us any idea how many days or weeks it may take to accomplish all this. Now, as these points are very important, and if they turn out as he hopes they may they will have a good effect—either in raising the value of the mine if successful, and the contrary if not so. I think, therefore, that he might give us some idea as to the time it would require to effect the same. I should also like to know why no report of the amount the 30 tons sampled on the 9th have realised was given. In other mines the price per ton is given, and I think it ought to appear in the Journal as they do. If mining reports were more explicit I am certain confidence in mining would be strengthened, and as one who has stuck to the mine for many years I think I have a right to throw out these suggestions.

ANOTHER SHAREHOLDER.

CORNISH MINING INVESTMENT.

SIR,—Notwithstanding the late depression, amounting to unprecedented disaster, in the commercial world, it is satisfactory to know that some of our established mines have been able to keep paying dividends, while others have tided over the difficult times by paying costs. Mining may now be said to have arrived at its lowest ebb, its future depending on the price of metals, and as there is an increased demand set in in the world's market, it is pretty plain that a demand will spring up for shares in *bona fide* mines, and, consequently, a great rise in their price. A few instances may be mentioned of the depreciation in the market value of mines, owing principally to the great depression in the metal market, while, on the other hand, the anticipated rise in the market value of copper and tin will cause a corresponding rise in the value of mining stock. South Crofty sold about three years since at 120*l.* per share, now selling at about 17*l.*; Tincroft, 75*l.*, now selling at 20*l.*; Carn Brea, 120*l.*, now selling at 40*l.*; Dolcoath, 80*l.*, now selling at 40*l.*; South Caradon, 400*l.*, present price being 120*l.* Here there is a batch of mines out of many known to the writer which must take a jump, whilst there are others of a progressive character, such as West Poldice, Unity Wood, Killifreth, South Carn Brea, and others, which must be equally affected. In many instances the investor would not lose much if he were to lose all at the present price of shares, while his chance of enriching himself must be patent. I, therefore, advise my friends to take time by the forelock, and take a slice in several while there is an opportunity, and they will have brighter countenances at the end of 1877 than they had at the end of last year. CHAS. BAWDEN.

St. Day, Cornwall, Jan. 24.

PENSTRUTHAL MINE, AND PENSTRUTHAL DISTRICT.

SIR,—The very elaborate, though succinct and terse, report of Capt. Lean, a practical miner of over 50 years' standing, on the lodes, cross-courses, and strata of Penstruthal Copper Mine, is both interesting and instructive, still there are a few other points that require attention in order to clear up the phases associated with this highly interesting mine, and no less important and half-developed district.

Capt. Lean makes no reference whatever to the "elvans" that traverse the sett on either side of the newly discovered copper lode, nor their influence upon this lode in particular, or otherwise, as affecting the mineral products of the three or four other lodes lying contiguous thereto, and standing whole to surface, embedded in the same channel of ground that must inevitably be influenced by the cross-courses which he so fully and graphically describes in connection with the eastern and virgin section of the company's sett.

I have no doubt, Mr. Editor, that Captain Lean will furnish your various readers with his practical views upon the value and importance of these elvans, and also give us a glimpse into the facts attending the formation and collection of copper ores in this district. His experience of 50 years must embrace the rise and collapse of all the mines from Penstruthal to Tresavean, on to Ting Tang, Squire, Jewells, Gorlands, Damsels, United, Consols, and Clifford, to say naught of the Bullers, Bassets, and South Frances, standing immediately to the east, north, and west of Penstruthal.

As many of these mines are now filled with water, we must rely for data and intelligence on the practicals of the day, as it is as impracticable to inspect the mines in depth as it would prove impossible to scoop out the Mississippi with a tea spoon.

Is it not true that the former rich deposit of ore at Penstruthal made up near to the surface, and was it not wholly embedded in the granite? Again, did not the vast stores of mineral found at Tresavean exist wholly in granite? And, likewise, were not the rich ores of South and Wheal Basset and of South Frances, stretching westward of Penstruthal, all embedded in granite, and were they not vomited forth rapidly from shallow sections of the various veins?

On the contrary, were not the copper ores in Buller, West and North Basset wholly found in killas or clay-slate, and did not the lodes prove unprofitable in the granite, or change from copper to tin producing veins? Yet these lodes were traversed by north and south cross-courses (magnetic), and in cases accompanied by east and west elvans, which exercised a truly beneficial influence on the produce of the lodes; as, for instance, it was the character and nature of the elvan at West Basset that decided the late Capt. Joseph Lyle on reworking the mine after its abandonment by the former adventurers, who refused to persist in driving a cross-cut through it, but then Capt. Lyle was a practical in advance of his day, hence his successes here, at the adjoining mine—North Basset—and at Carn Brea, still further north.

If the elvans at West Basset proved so important in the yield of copper ores, why should not the two at Penstruthal prove equally effectual in the collection of it? This appears to us an oversight on Capt. Lean's part, or, possibly, he regarded the influence of such phenomena as too well established to require notice in his report. He will, however, as a practical, excuse us in drawing his attention to the subject, and we hope, for the edification of your readers, and especially so of the uninitiated, he will eliminate the character of influence of these elvans on the east and west, or electric lodes. H... are these anomalies to be reconciled with the unerring laws of Natur... We must look to practicals for a solution!

This is a subject most interesting to miners, and of unusual s... nificance to the student of practical geology.

Basset-street, Camborne, Jan. 24. NIL DESPERANDUM.

WHEAL GRENVILLE.

SIR,—As your correspondent "Crede" imagines, I do confes... being not a little amused at the result of the past 12 months' ope... tions under the new management. Nor will anyone be surpri... at my feelings when he considers the means that were adopted, ... the statements and charges that were made, to effect the discha... of the late agents and myself. But much as I am amused I am s... more astonished that the committee should have stopped the eng... I cannot conceive their object in doing so, considering the act mig... be attended by a most disastrous result. The proceeding seems t... more extraordinary when one remembers that in March last ... chairman told the shareholders that the old management "had l... thousands or tens of thousands of tinstuff standing in the mine, ... which it would take five years to exhaust;" and only at the l... general meeting the manager told the shareholders that four tim... as much ore ground was being discovered as was being taken aw... One can hardly imagine, therefore, that the mine has suddenly b... come exhausted, and as to the water, as I said in my last lett... under the old management it has risen close up to the 120 fm. lev... and yet it was mastered without any difficulty, and also witho... the agents putting the company to a farthing of expense in callin... upon other agents to give their opinion and advice. We were ac... cused of being an expensive management. I should like to kn... what it has cost the company for obtaining the opinions of oth... agents on this water question. What, then, was the object in sto... ping the engine? If the object was really the protection of t... underground machinery I contend that the step taken is calculat... to imperil and not to preserve the pitwork. Anyone knows wh... is likely to arise through plunger poles being under water, if on... for two or three days, and if the Wheal Grenville adventurers ... not lose any of their pitwork through the present step they will b... very fortunate. Whilst cordially agreeing with most of "Crede's" ... sensible and business-like remarks, that in regard to the outlay ... 10,000*l.* for new machinery, &c., I cannot coincide in. More th... two years ago Mr. Lane advocated this step, which I, then a larg... shareholder in the mine, opposed; as I did not consider the pr... spects of the mine warranted such an outlay at the then price ... tin, which was even 10*l.* per ton higher than now. Under the pr... sent management not a fathom of ground has been laid open b... sinking the shaft, and if I were still a shareholder I should n... think of now advocating that which I considered would be unwi... and imprudent when tin was much higher in price.

When on Mr. Lane's proposition a committee of investigation w... appointed, he being one of that committee, Capt. Teague, of Carn Br... and Tincroft Mines, and Capt. Josiah Thomas, of Dolcoath Mi... were requested to inspect the mine and to report upon its prospe... and management. Neither of these gentlemen found the slighte... fault with the management; and with regard to the erection of a... ditional machinery which Mr. Lane had been so urgent for, they co... firmed my views, and were both of opinion that it would not b... prudent to go to the expense. The tin market is worse now than ... was then, and as I just observed no new levels have been opened i... the mine, and previous to the last three sales of tin the return... had not been increased. The returns for the last three months I a... informed were larger, not from any improvement in the mine, b... they arose through the working of a good run of tin ground la... open by the old agents in the 130, but which could not be take... away until the ground was drained and ventilated. An experi... enced agent who recently inspected the mine, tells me that the ... ground being laid open, particularly in the two bottom levels, is n... so good as that which has been taken away during the last three ... four months. Under all these circumstances I think that "Crede" ... will see and admit that were his advice adopted the adventurers ... would commit even a greater folly than he thinks they committe... in transferring the management. But "Crede" may say "Then, if ... would not be prudent to erect new machinery, the best plan wo... be to stop the mine." I do not think so. A re-organisation migh... be made without including extra machinery. I have still great fai... in the mine, and if a plan I could suggest were adopted I would sho... my confidence by purchasing shares in the mine, which I feel co... vinced would before long stand at four or five times its present valu...

These remarks will, doubtless, bring down upon me the wra... of the present management, who will be pretty sure to ask me wh... right I have, not being a shareholder, to make any comments upo... the mine or its management. But let the shareholders exerci... their own judgment, and reason from what has occurred. If th... parties put the question my reply is—"What was there so bad a... wrong in the old management to justify the committee in their re... port to the shareholders, date 1 Dec. 30, 1875, to say that 'they fel... constrained to come to the conclusion that a thorough change i... the management at the mine is absolutely necessary, and that unti... this is effected there will be little chance of bringing your affair... into a satisfactory state?'" What, let me ask, has the "thorough ... change" the committee considered so necessary done for the share... holders? Further, I would ask what right had the Chairman at th... last general meeting to assert that if the management had not bee... changed the company would probably at that moment have been fro... 10,000*l.* to 12,000*l.* in debt? The present management is pursuin... the same system of operations as we did, and what right, therefor... has the Chairman to publicly state that we should have carried o... those operations at such a heavy loss to the company? After thes... reflections upon the old managers I consider that when I see o... accusers at fault I have an indisputable right to comment upon it... Not a stone was left unturned to effect the discharge of the former ... agents and myself; we were accused of gross mismanagement of th... company's affairs. I was publicly accused of being the larges... jobber in the shares, and of influencing the market to suit my share... jobbing purposes; in short, if the late agents and myself had bee... the greatest rogues and vagabonds in creation we could not hav... received scantier courtesy or consideration.

"Crede" calls attention to the fearful depreciation in the valu... of the mine since the transfer of management took place. Thi... depreciation must be a serious matter for those shareholders wh... voted for the change under the idea that not only would the share... rise to a much higher value, but that immediate profits from th... mine might be almost safely calculated upon. They did not stay t... ask themselves—"If agents who have been in our employ for years ... cannot work the mine to a profit, how is a perfect stranger going ... to do it for us?" They listened to the voice and reasoning of agi... tation, and what is the result? I felt certain that the issue of th... change would be very different to what the shareholders were led ... and that too easily, to look forward to, and I sold the whole of my ... large interest in the mine before the first call was made under the ... present management. I think it will be admitted that subsequent ... events have proved the correctness of my judgment and the wisdom ... of my prudence. During the years that I was connected with the ... company the lowest price I ever remember the shares to have reached ... was 10s. The mine was then looking very poor, and many of the share... holders were for winding up. Though there was no committee in ... those days, the mine was pulled through nevertheless, and subse... quently rose to a value of 60,000*l.* in the share market. Last Sep... tember I could have bought 500 shares at 2s. 6d. each, or at the rate ... of less than 700*l.* for the property, and this, Mr. Editor, was only ... nine months after the committee had publicly stated that a thorough ... change in the management was necessary to bring the affairs into a ... satisfactory position.

That the present parties thought they would be able to do much ... better than the old agents, and thereby increase the market value ... of the property, and that they were highly delighted at having ... effected the change of management I have not the slightest doubt. ... As your old friend Benny Popputhed observed to me the last time ... I saw him—"When they'd done it, Missur Watson, they were as full ...

of pride and consate as a Cousin Jack is when he treats his sweetheart to a ride on a whizzabout with un at Camborne feer." They thought they had only to assume the reins of power, and fortune and popularity were assured to them. The result, however, is scarcely what was expected, either by themselves or those who helped them to their present position. I think it, however, the height of injustice that they should at every meeting have some reflections to cast upon the old agents. Whilst unfair to us, it may make others think they are sorry and savage that they are in possession of that which they spared no exertion to wrest from us. Mr. Editor, it was the want of that honest American—Abraham Lincoln—to indulge in humourous jokes and tales even upon the most serious occurrences and occasions. I do not presume to lay claim to any of the wit and talent of that patriotic but unfortunate man, but with your permission I will conclude this letter with a tale that was once told me by an old Cornish mine agent. Certain parties in Cornhill may not see its point, but "Crede" may, and if not your Cornish readers will. "There was an old tributer up eastward, and who was also a local preacher. One day he was discoursing on the folly of human nature relying upon its own strength, and he said—'Now, my friends, there are three things it is very difficult to overcome, whatever power you have given ee, and they are—a West Country bal cappen, a purser, and our ghostly enemy. The last named I've throw'd pretty often, till I believe he's just tired wrastlin with me. The other two I've never yet been able to get the best of. Whenever I've tried to beat the wind out of un I've always hurt myself a brave bit more than I've injured they. 'Tis my opinion they are composed of some unclassified intractable human rock that isn't to be blasted by no moral or physical powder livin.'" The narrator on finishing his tale observed—"Why preacher should consider a western agent and a purser nothing like so good as the parent of wickedness I don't know, but as 'tis, Missur Watson, I wasn't a cappen nor you a purser in them days, so he couldn't have alluded to we."

Jan. 23. JOHN WATSON.

WHEAL GRENVILLE—SOUTH CONDURROW.

SIR,—Allow me through the columns of your valuable Journal to suggest to my fellow-shareholders the propriety of our having a meeting to take into consideration our present position. Our committee do not think it necessary to ask our advice or lay before us the result of the multitudes of councillors who have been called in to show their lights. We were told by circular "the engine had been stopped in order to save the machinery underground." Having written to Cornwall to some of my friends, I cannot find that the engine ever stopped save for necessary repairs, incidental to all pumping-engines. The circular in question did not tend to the confidence of the shareholders; some got frightened, thinking the mine was irretrievably lost, and sold their shares at 5*s.* each—such was the effect of a badly expressed missive. The sense of the body of shareholders should be at once taken either to cease working, as they had now are burning coal and making no progress, or take such steps to make progress certain. I doubt not the ability of Captain Hodge to direct the committee, but if the committee have not confidence in his ability let the shareholders know why. I for one can see no necessity for a multitude of advisers—the shareholders are capable of discerning what should be done. We may go on forcing our fires and burning coal until we have sent enough coal through the grate to pay for another engine. The flat-rod shaft, beneath whose bottom the riches lie, cannot be sunk six months out of twelve for want of power in the engine, during which time one-third more coal is being consumed than a larger engine would require to keep the mine clear of water.

Another question a body of shareholders should ask is—What mine drowned Grenville? Did South Condurrow? If so, what are South Condurrow shareholders prepared to do? Are they prepared to contribute an equitable amount to the erection and working of an 80-in. engine? If not, what then is our course? Shall we quietly rest, and sink the engine-shaft until it takes the flat lode, and leave South Condurrow to keep the water? Or, with the meekness of lambs, say—Thank you; we will do our best to get you out of the pool if we, goat-like, sink ourselves. Our committee may be taking steps to conclude an equitable arrangement, or they may not, of which we are ignorant. If not, they are not awake to their own or the interests of Wheal Grenville shareholders. We in Cornwall know there is a good mine, and regret much the want of courage to face the present difficulty.—*Camborne, Jan.* 22. MINER.

SIGNS AND PROMISES OF THE PERIOD.

SIR,—When we consider the important part Great Britain has taken in the advance of civilisation and prosperity—the vast mass of material and of skilled labour provided by that country in the conception, design, and construction of railroads, telegraphs, steam and sailing ships required to conduct, and allied with, the commerce of the nation at home, our colonies, and with foreigners—we may well be proud of our exalted position among the communities of the world, of our workmen, and of our wealth. It is difficult to grasp the fact that the enormous sum of over 750,000,000*l.* has been the capital expenditure in railways and telegraphs alone, and this amount, marvellous as it appears, springs solely from British savings, yet the annual gross earnings do not exceed sixty millions, or (say) 8 per cent. on the capital expended, and less than 5 per cent. exclusive of guarantees. Good in things evil—though, perhaps, rarely foreseen—may oftentimes be traced when the evil has in part expended its force. The immediate result of the profusion indulged in by all classes associated with railways during the decade preceding 1866 was a great loss and waste of wealth, the ruin of many thousands of families, and years of such stagnation in commerce as was hardly ever known before, but with the close of this depression. Railway investments have experienced a change for the better, and continued improvement in the administration has become from time to time evidently practical and manifest. Traffic among other things has greatly revived, and the process of resuscitation has been promoted by solid, wholesome, legislation, and forced economy in extensions, construction, and maintainance which we might long have looked for in vain but for the disastrous times which culminated in the collapse of 1866, and the years of distrust that followed.

The feverish speculation fostered by a Whig, or what may be termed a Radical, Government raised the scale of manufacture and constructive enterprise to such an unhealthy pitch of inflation up to the close of 1874 that panic ensued, and consequent reaction and depression have prevailed over the whole period up to the close of 1876; but, happily, a change for the better has now become visible. Yet in this instance the interests and securities affected have not been railways; but, on the contrary, manufacture and mining enterprise have suffered most, with the collateral trades and occupations allied and dependent thereon.

The cotton trade has been, and still is, in a deplorable state; the manufacture of iron, steel, engines, and all the paraphanalia associated therewith have sustained a protracted collapse, and heavy losses and financial failures have ensued. The coal trade in all its details has been sadly prostrate; and although the production of 134,000,000 tons have sprung from the sinews of the miners "during the last recorded annual return," still the owners have made slight average profits on this all important and gigantic industry. Next in importance we have our mines of lead, of copper, and of tin; and fortunately for these branches of our metallic interests, the period 1874 to the close of 1876 has weeded the market of that host of ephemeral and questionable concoctions which ever accompany speculative enterprises of a high and profitable character (as that of mining) when times are propitious for their introduction at moments of inflation in the trade, commerce, manufacture, and finance of the country. We have hence a market free to the investor to select his securities all but unexceptional in character, of depressed value, and of sterling worth.

In respect to lead, we may enumerate Great Laxey, Minera, Van, Van Consols, East Van, Glyn, Bodidris, Prince Patrick, Grogwinion, Roman Gravels, Tankerville, Leadhills, and Pateley Bridge among many others.

Again, as regards copper, allow us to ask what mines can possibly be regarded with favour either in respect to present returns and future promise than South Caradon, Glasgow Caradon, Wheal Crebor, Devon Great Consols, Clifford, Penstruthal Consols, and West Seton? Cornwall has given us a fresh dividend tin mine in Eliza Consols, and another in perspective in Wheal Agar, in addition to continued productiveness at East Pool, Dolcoath, Peevor, Phœnix, Botallack, and Owles, with discoveries of note in the St. Austell district, which denote that capital could there be expended with every probability of substantial success.

Among the progressive mines Cathedral shows evident signs of making a copper mine; the ore is rich in character, while the matrix and the rock formation in which the lode is embedded is highly crystallised and decomposed, similar, in fact, with the strata in which the rich mines of the district are found. Penstruthal Consols is attracting considerable attention, and shares are scarce in the market, while the price is hardening. The discovery made on the copper lode is highly significant, and it must be remembered that the levels are entering virgin ground, while the presence of two elvans and the Tresavean and Buller cross-courses enhances greatly the importance of the pioneer points now being extended in their direction, and especially the 74 east. R. TREDINNICK,

81, *Bishopsgate-street Within, Jan.* 25. Consulting Mining Engineer.

DEVON GREAT CONSOLS COMPANY.

SIR,—Allow me a few words in reply to a letter appearing in last week's Journal, signed "J. Thomas," in reference to this company, in which he suggests that I should be pensioned off; the unavoidable inference being that I am a salaried agent, which is not the case. I retired many years ago, and for no other reason than not consenting to be exclusively the company's mining superintendent. Since then I have received no salary. So much for Mr. J. Thomas's erroneous assumption, and consequently unnecessary suggestion.

Gresham House, Jan. 25. J. H. HITCHINS.

CORNISH MINING—WHEAL AGAR.

SIR,—The special report of Capt. Hodge, in last Saturday's Journal, will furnish one of the most striking examples of the legitimacy of Cornish mining properly pursued. Never having been what is called a "market mine," but worked by parties holding a large number of shares, Messers. Lyall, Dobree, and others, spent a large sum in sinking shafts and driving shallow levels 30 years ago. First at Great Fortune shaft, then the Western shaft, afterwards at Winstow shaft, near the eastern boundary, and 500 yards from the present workings. Two of these shafts—Winstow and the Western shaft—had an engine upon each, and were sunk below the 100. A considerable quantity of copper ore was sold some years ago. The present engine-shaft is sunk about 4 fms. below the 195 fm. level. The present proprietary having devoted their energies to erect an excellent 70-inch engine, with four boilers, and to push down the shaft as rapidly as possible, in the endeavour to find the rich course of tin their strong and unflinching faith led them to believe was beneath their feet. Capt. Hodge's impartial valuation of the lode now seen in the bottom of the shaft and the north side places beyond doubt that Nature lies not in yielding where promises are given. This same lode can be seen in East Pool many fathoms wide; stopes, the longest timber will not support, where men work for years without any perceptible decrease of mineral in stock.

Wheal Agar has a stamping-engine capable of driving 100 heads recently erected, dressing-floors being laid down. Boring machinery, which has not been recently worked owing to the inability of one engine to draw stuff and stopping every few minutes to work the compressor. The success which is looming in sight will induce the committee to renew their efforts to achieve that success they have believed attainable by application and perseverance. If a proper engine be obtained power sufficient to work five or six drills at a time will be sought, so that the new shaft can be sunk and two of the bottom levels pushed eastward with all speed. Another object that will not be lost sight of will be to avoid manual labour at surface as much as possible, by having a powerful stone-breaker, into which the tinstuff can be trammed without lifting. The stuff as broken will fall into slides ready to fall into carts or wagons ready for the stamps. The immense size of the lode, and its richness, renders it very probable of a profitable result at a very early day on the economical and vigorous working of the mine, as a just reward of the many long years of patient perseverance.

SHAREHOLDER.

THE MURCHISON TESTIMONIAL.

SIR,—Your correspondent, Mr. R. White, may be said to have shown by "Plain Facts" that Mr. Murchison is eminently fitted for a seat in Parliament. Mr. Murchison must have been a very young man when he published his first famous pamphlet. I believe that the article referred to in the Quarterly was a review of Mr. Murchison's pamphlet, coupled with the addresses of Sir R. Peel, Lord John Russell, and Lord George Bentinck, the three great party leaders at the general election; this was a high honour, and does immense credit to the rare abilities so early and conspicuously displayed. Mr. Murchison's services to legitimate British mining are too well known to your readers to require much comment, and I will merely add that I shall be much pleased to give my humble aid in promoting the intended testimonial to him. H. V.

Willes-road, Kentish Town, Jan. 24.

[For remainder of Original Correspondence, see to-day's Journal.]

FLAGSTAFF.—An informal meeting of a few of the leading shareholders was held at the Cannon-street Hotel, on Monday, when most satisfactory letters and telegrams received from Mr. Hunter, the manager of the company in Utah, were read. From the information furnished, it appears that Mr. Hunter arrived in Utah just before Christmas, with papers revoking the appointment and attorneyship of Patrick, the then manager, who had been nominated by Davis, and appointed by the company, but who had long ceased to regard the company as the owners and controllers of the mine. Mr. Hunter visited the mine, accompanied by the United States Marshal, and, presenting his papers as attorney for the company, demaded possession, which after some demur was given. He then called the whole of the men at work (about 100) together, informed them of the change of control and management, and offered to re-engage all those willing to take service under him. All consented, and within half an hour were again at work as if nothing had occurred. Davis, who was at New York, finding his possession gone, hastened to Utah, and applied to the Courts to have Patrick re-instated; and Hunter commenced suit against Davis, raising the whole issue that the Davis debt was fictitious, and that the agreement with the original directors of the company and Davis was fraudulent. The case was heard on the 13th inst., and the judgment of the Court was deferred until the following Monday, when it was given to the effect that Hunter's possession was sustained, Patrick and Davis were restrained from all interference, and the Davis agreement was pronounced fraudulent. Practically, therefore, the company instead of owing Davis anything have a large claim against him, which they are prosecuting; but Davis left the territory soon after very much disheartened, and the company is left in undisturbed possession of their property. Of the mine itself, all that had been said in its favour seems to have been more than verified. Since taking possession, Mr. Hunter has instituted several economical reforms, notably the contract for the hauling of the ore at much less than the late prices. Latest advices showed that about 100 men were at work, turning out about 60 tons of ore per day. The reserves seemed to be large, and Mr. Hunter was of opinion that a profit of from 40,000*l.* to 50,000*l.* per annum would be realised from the property, and that the shares were worth par. If the floating indebtedness in Utah could be provided for, either by the shareholders subscribing for debenture bonds, or by an arrangement with the Omaha Company, which he was hopeful of carrying out, dividends could be soon resumed. Private telegrams from Utah that had been received by a shareholder present, were read by him, and confirmed those sent to the directors, and stated that the company's possession was secure, and that the estimated daily output of 60 tons gave profits of $1000 (200*l.*), or (say) 60,000*l.* per annum. The directors stated that they had been pressed for payment for a few amounts due in England, and they urged those present to furnish funds to liquidate these claims. The call was well responded to, and a sum sufficient to free the company from embarrassment was immediately subscribed. The course the directors had taken was warmly approved by those present, and a resolution to that effect was passed.

Meetings of Public Companies.

DEVON GREAT CONSOLS MINING COMPANY.

An extraordinary general meeting of shareholders was held at the company's offices, Gresham House, on Tuesday,

Mr. W. A. THOMAS in the chair.

Mr. ALLEN (the secretary) read the notice convening the meeting, and the extracts from the Articles of Association bearing upon the election of directors and auditors.

The CHAIRMAN, having declared the meeting duly constituted, said that this was a special, or, in the words of the Act of Parliament, an extraordinary meeting, therefore no other business could be done than that mentioned in the notice. With regard to the election of a director the only gentleman who had complied with the Articles of Association was Mr. Peter Watson, so that it was merely necessaay to pass the formal resolution electing him.

Mr. KEARTON proposed "that Mr. Peter Watson be and is hereby elected a director of the company in the room of Mr. John Blackwell, deceased."——Mr. TAYLOR seconded the resolution, and upon its being put to the meeting it was carried unanimously.

Upon the proposition of Mr. KEARTON, seconded by Mr. FITZGERALD, it was unanimously resolved "That Mr. G. T. Rait, public accountant, be auditor of the Devon Great Consols Company, in the room of Mr. Charles Chatfield, deceased."

Mr. PETER WATSON said that having been invited to become a director, having received the support of a large number of shareholders, and having been unanimously elected, he had to thank them for the honour they had done him. All he could say was that it would be his duty to do his utmost for the interest of the shareholders. The mine had been one of the greatest in the world, and it might be so again, for he confidently believed that there were still the elements of a great mine in the property, and the introduction of a little fresh blood into the management might not prove disadvantageous. He had known the Chairman and noticed the management for the past thirty years, and had himself been connected with mining and smelting from his boyhood, and hoped that in connection with the present company, and having the unanimous support of the shareholders, he would endeavour to exert himself to the utmost, for he was about the second largest shareholder, and in doing so would benefit all others connected with the company. He hoped that the day was not far distant when the company would resume the payment of dividends, though he would never advocate the policy of paying dividends before a company was in the position to pay them. They might rest assured that they might command his best services as long as he retained a seat at the board. He was glad to think that they had elected a public accountant as auditor, as he felt that in a large company like theirs it was calculated to give full confidence to the general body of shareholders. (Hear, hear.)

Mr. RAIT thanked the shareholders generally, and especially those absent, for the support they had given him, and for appointing him an auditor of the company. He had been particularly anxious to obtain the appointment, because to a professional auditor there was nothing of which he naturally felt more proud than to be connected with such a company.

A cordial vote of thanks was given to the Chairman, and Mr. TREHERNE having congratulated the shareholders upon being fortunate enough to elect so practical a man as Mr. Watson in place of the late Mr. Blackwell, the meeting separated.

GREAT WHEAL VOR MINING COMPANY.

An adjourned general meeting of shareholders was held at the company's offices, Gresham House, Old Broad-street, on Thursday.

Mr. J. O. HANSON in the chair.

Mr. J. JAMESON TRURAN read the notice convening the meeting, and the subjoined reports of the directors, of Mr. Josiah Thomas, of Dolcoath, and of Capt. Harris, the company's agent:—

As the shareholders are aware, the present meeting, adjourned from Dec. 28, is held for the purpose of receiving a further communication from the committee of management, inasmuch as it was then thought that sufficient drivage had not been effected after cutting the lode below the cross-course to enable anyone sufficiently to form an opinion as to whether or not (taking into account the present low price of tin) it was desirable any longer to continue operations at the mine without the sanction of the shareholders, as it would entail further calls upon them. During the interval the levels have been extended east and west on the lode about 6 fms., and the committee regret to state that instead of showing any improvement it has unfortunately fallen off both in its character and productiveness. The committee, as then promised, have had the mine inspected by Capt. Josiah Thomas, of Dolcoath Mine, well known as one of the most experienced mining agents in Cornwall, and his report will be laid before you, from which it will be seen that but little hope is held out by further expenditure except by sinking the shaft deeper. The committee under these circumstances would recommend that a special meeting, pursuant to Rule 20 of the company's rules, be called for the purpose of determining upon the winding-up the adventure or otherwise. In the meantime a proxy will be sent to each shareholder, accompanied by the reports of Captain Josiah Thomas and our own agent, for the purpose of determining if, with the prospect of continued calls, they are disposed further to prosecute the adventure, or whether they would wish the company to be wound-up forthwith.

Dolcoath Mine, Jan. 23.—I inspected the workings of this mine yesterday, and beg to send you the following report:—West Metal shaft is sunk to the 100, just above which the cross-course by its underlie west fell into the shaft. The 100 is now driven about 5 fms. east of the cross-course; for about 2 fms. in length the lode was regularly formed, being from 2 to 3 ft. wide, and containing a little tin, but not enough to be of any value for working. In the present end the lode is mixed with killas, and somewhat disordered. In the western end of the shaft, immediately to the west of the cross-course, the lode has also been cut through, where it is of about the same character and appearance as in the eastern level. Looking at the general character of the district, and of the lode in the eastern workings of the mine, one might reasonably have anticipated that an improvement would be met with somewhere about the 100, especially in connection with the cross-course. It is possible, however, that another part of the lode may be standing further south, and in order to prove this satisfactorily I think a cross-cut should be driven south a few fathoms. The opening on the present lode for a total length of only 6 fms. cannot be said to be much of a trial, and the 100 ought to be driven further both east and west to see a little more of the nature and character of the lode. My impression, however, is that you are not yet deep enough for the lode to be quite settled, and having gone so far I think it would be a pity to shut up the mine without making a further trial. If you decide on sinking deeper and opening on the lode at the 100, you will have the cost of working the pumping engine, which cannot be lessened; the other cost will depend on the number of men you employ underground.—J. THOMAS.

Jan. 24.—During the present month we have driven the 100 east of West Metal engine-shaft near 4 fms., and I regret to say the lode has not improved to my expectation, and in the present end is disordered and poor. I find in the upper levels, driven by the former workers, that frequent patches of soft killas occur, disordering the lode; but I expected that the 100 would be sufficiently deep to be in settled ground and have a well-defined and productive lode. In this, so far, we are disappointed, and I am sorry to say that, in my opinion, the present indications do not warrant further development in this level, and deeper sinking is the only thing I have to advise in order to meet with a productivr and profitable lode. This has been a great tin producing district, but not so much profit has been made above the 100, and looking at our own mine to the east we have a similar evidence. Whereas a little tin was raised above the 100, we had a most productive lode below, and I have not the least doubt that by deeper explorations similar results would be realised. We have ample engine-power to put the mine 100 fms. deeper, and sufficient other machinery to carry on the mine on an extensive scale. The ground is also moderately easy for sinking, so that good progress could be made. Our engine and pitwork are in good working condition, and the mine kept free from water.—S. HARRIS.

The CHAIRMAN said that as far as information was concerned they were in possession of all that it was in the power of the committee to render. They had heard the report of Capt. Josiah Thomas, whom the directors had requested to inspect the mine, and also that of Capt. Harris. From these reports they could see that their prospects were of a very speculative character, and that they could not continue to carry on operations without making further calls, and they would also have to consider the prospects of the tin market, and whether it was such as to lead them to conclude that it was wise to incur further expense. This, however, was entirely a shareholders' question, and it would be for the meeting to decide what should be done in the matter. If it were determined to wind-up they hoped that by the sale of the materials, and with the balance at present in hand, they would be able to carry out the liquidation without making a call upon the shareholders; but if they thought the property

worth further trial they would, of course, act accordingly. If it were determined to wind-up, two meetings would have to be held to pass the necessary resolutions, and considering the suggestion thrown out by Capt. Josiah Thomas, it might be well to incur the cost of the cross-cut south referred to. He was not aware that he had anything further to communicate to the shareholders, but he might remark that this not being a limited liability company it was not like a concern where proxies were obtained to swamp the shareholders. Under any circumstances they would have to keep the engine going to keep the water out of the mine until they determined whether they should or should not wind-up, otherwise they would lose the materials; therefore, the expense of making the cross-cut would not be great; it would not entail an additional 100*l.* to make the test. He thought it only right to state that one or two instances had occurred in Cornwall in which the fortunes of a mine had been entirely changed by the discoveries made in such a driving as that now suggested.

A SHAREHOLDER expressed the hope that if they determined on winding up the liquidation would not be placed in the hands of a so-called public accountant, which always proved equally disastrous to creditors and shareholders.

Mr. E. W. CHILDS (the company's solicitor) said they need not fear anything of the kind. What was suggested was that the committee should be appointed as the liquidators, giving them full power to wind up the concern. The company was not a limited liability company, and therefore was not under the Companies Acts. The committee had always gone upon the principle of paying everyone having claims upon the company except Messrs. Harvey, who were large shareholders and on the committee, so that there was no one who could put them into the Court for liquidation.

A SHAREHOLDER said that as Messrs. Harvey and Co. were large shareholders he would be glad to know their opinion with regard to the present position of the mine.——The CHAIRMAN regretted that they had had no opportunity of learning their opinion, as Mr. Husband, the representative of the firm, had for some time past been laid up by illness.

A SHAREHOLDER thought they should undoubtedly expend the 100*l.* for making the test referred to.

The CHAIRMAN said they had consulted Mr. Childs, who was certainly one of the most experienced mining solicitors, as to the resolutions which it might be necessary to pass. The first was "That the committee be and are hereby authorised and required to call a special general meeting, in pursuance of rule 20 of the company's regulations, to consider and, if approved, adopt resolutions for winding-up the concern, and the second was that, in the opinion of this meeting, all the expenditure at the mine should be at once discontinued, except the driving of the cross-cut south, as recommended in the report of Capt. Josiah Thomas, of Dolcoath." As he had already stated, this was entirely a shareholders' question. He thought, therefore, that some one in the body of the room should, if he thought fit, move them.

A DIRECTOR could scarcely agree to that, since it was calculated to create the opinion among shareholders who did not happen to be present that the winding-up was forced upon the committe, whereas just the reverse was the case, the committee being the largest shareholders, and considering the step to the advantage of them all.

The CHAIRMAN then proposed, and a SHAREHOLDER seconded, the resolutions, which were put to the meeting, and carried unanimously.

The CHAIRMAN remarked that as to-morrow (Friday) was the setting they would be able to give effect to the resolutions immediately.

Thanks having been cordially voted to the Chairman the meeting separated.

SOUTH CONDURROW MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Austinfriars, on Wednesday,—Mr. H. J. MARSHALL in the chair.

Mr. JAMES HICKEY (the secretary) read the notice convening the meeting and the minutes of the preceding one, and the statement of accounts for the 16 weeks cost paid to Jan. 20, and the returns from October 7 to January 13, showing a credit balance of 1965*l.* 16s., together with the subjoined report, were submitted:—

Jan. 23.—Since your last general meeting we have made the Plantation shaft complete to the adit, and have intersected a small lode in the shaft carrying good tinstone, which will be proved by a cross-cut as soon as the 10 is reached. We have been obliged to suspend the boundary shaft on account of the water. The 30 has been cleared and secured from King's shaft to Vivian's. We hope soon to reach the end, and to resume driving west towards the Plantation shaft. We have cut a plat at the 40 at engine shaft, and began to drive east on the great tin lode, which yields good stones of tin, and looks likely to improve. A rise is being put up in the 40, east of new shaft, on Fraser's lode. The rise referred to is unproductive, but the lode in the bottom of the 30 over this rise is worth 15*l.* per fathom, which we hope soon to drain. The 50, east of cross course, is worth 12*l.* per fm. The rise in the back of this level is also worth 12*l.* per fathom. We have put down tramroad in the 50 west, on West Basset lode, and have extended the 50 cross-cut north towards the great lode. From indications seen in the end we think we are near the lode.

The 60 west is worth 12*l.* per fathom, and is improving. The rise in the back of this level is worth 18*l.* per fathom. We hope to soon cut this lode in the 50 cross-cut already referred to. We have commenced to sink in the bottom of the 60 west, where the lode is worth 15*l.* per fathom. The 70 end west is worth 10*l.* per fathom. The winze in the bottom of the 82 west is worth 8*l.* per fathom, but is now suspended on account of the water. The 82 end east is worth 10*l.* per fathom. The 93 west is worth 12*l.* per fathom, but we are obliged to suspend this end, owing to the late heavy rains, and the influx of water from East Wheal Grenville, which have flooded the bottom of the mine; but we hope soon to resume operations in the 93, as the water is decreasing. The stopes throughout the mine are yielding fair quantities of tin. We are keeping on a great deal of exploratory tutwork operations—*i.e.*, driving and sinking—especially in the shallow levels, which are opening out profitably productive.—WM. RICH, WM. WILLIAMS, HY. ABRAHAM.

Capt. RICH explained that they had water in the bottom, owing to the recent floods, which had somewhat delayed them, but it was now going down. They had 13 or 14 bargains at work, and altogether the mine was looking very well indeed.

Upon the proposition of Mr. WESTON, seconded by Mr. ROSS, the report and accounts were unanimously adopted.

The CHAIRMAN said they were very pleased to place so favourable a report before them, considering the floods there had been, and from which all mines in Cornwall had more or less suffered. A complaint had been made by Wheal Grenville that South Condurrow water was going down into it, but the complaint was groundless, for he and Capt. Rich had gone carefully into the matter, and they calculated that they were raising 50 per cent. more water than Wheal Grenville, that is to say they were pumping 1½ gallon to every 1 gallon pumped by Wheal Grenville, so that that at once disposed of the question. They had raised 171 tons of tin in the 16 weeks, which was the most that had been raised in any similar period, and they had not sold up so closely as usual, and thus their position was really somewhat better than the accounts showed them. Their last sale was on January 13, and they expected to sell 25 tons of tin on Saturday next. Since the floods they had not been able to draw from the 80 fm. level, but he was glad to say that Capt. Rich had just received a telegram from the mine stating that they had commenced drawing from that level to-day. As to the dividend, he would recommend them not, under the circumstance of floods, &c., to divide up too closely, and would, therefore, propose a dividend of 4s. per share, which would absorb 1224*l.*, and add 330*l.* odd to the balance to provide for contingencies. The credit balance carried forward after allowing for the dividend declared to-day would be 741*l.* 4s.

Upon the proposition of Mr. MARSHALL, seconded by Mr. ROSS, a dividend of 4s. per share was declared, and on the proposition of Mr. COULSON, seconded by Mr. SHERWOOD, the committee of management was re-appointed.

Capt. RICH said that as to the water their lode dipped to Grenville, but South Condurrow was suffering from the stoppage of East Wheal Grenville, which belonged to the same lord—the Hon. Mr. Fortescue. They had applied for a grant of East Wheal Grenville sett, as they could then recommend the adventurers to put up another engine to cope with the water, but could not get the grant. If they could not get it quickly they would have to put in a dam to keep the water back into East Wheal Grenville. Their engine was at present working 11½ strokes, which was decidedly too fast, and could not be increased.

Mr. HICKEY, in reply to a shareholder, said that every claim against the company, except the dues on the ores sold, included in the present account, was paid up to last Saturday.

The proceedings terminated with the usual vote of thanks to the Chairman.

SOUTH CARADON MINING COMPANY.

A twelve-weekly meeting of shareholders was held at the mine, on Tuesday, Mr. RICHARD KITTOW, Altarnun, presiding. The accounts read by the purser, Mr. J. G. Dymond, were as follows:—Cost for the first month, 2732*l.*; second month, 2982*l.*; third month, 3028*l.*: total, 8743*l.* Receipts by sale of copper ore, 10,481*l.*: leaving a profit on the three months of 1738*l.* A dividend of 3*l.* per share on the 512 shares absorbed 1536*l.*, and the remaining 200*l.* was added to the balances, making the balance now in favour of the adventurers 2179*l.*

On the motion of the CHAIRMAN and Mr. R. HAWKE, the accounts were adopted and the dividend passed.——The MANAGER (Captain Holman) reported:—

I am pleased to say the mine is still looking well, and, notwithstanding the very heavy rains we have had for a considerable time past, we have been enabled, through the efficiency of our machinery, to keep the water in fork. During the past twelve weeks we have explored in sinking shafts and winzes, and in the driving of levels, more than 200 fms. of ground, being about an average rate of working, and which, if we continue to do, I have no doubt will be attended with profitable results.

The report, which was considered satisfactory, was adopted.

The adventurers subsequently dined together, under the presidency of the PURSER.

The CHAIRMAN, in giving "Continued Success to South Caradon Mine," said that while in the western part of the county, and in other mines, affairs were at a low ebb, South Caradon maintained the high reputation which it had had for 40 years. He knew that it gave much pleasure to the management to be able to declare an enhanced dividend, and they were naturally very proud of the fact that South Caradon was still in so important and healthy a condition. For the sake of the shareholders, and also for the sake of the neighbourhood, he trusted that the prosperity at present enjoyed would long continue.

Capt. HOLMAN, in response, stated that although the management were very glad to give a 3*l.* dividend, they would be much better pleased, if the price of copper would admit of it, to return to the old days of a 6*l.* or 8*l.* dividend. (Applause.) While they continued to open something over 200 fms. of ground in 12 weeks, they certainly might expect from such a mineralised country good results. It was extensive work which had made the mine what it was, and when they stoped the ends and eased the tutwork they might be sure that they were on the high road to stopping the mine. (Applause.) They had an extensive set and mineralised country. The agents by diligent searching and strict attention had found minerals where they could hardly have expected to discover any, and provided South Caradon was kept going as it had been it would continue to pay dividends for a very long time. The mine certainly returned a large quantity of ore, the average return for the past year being 520 tons per calender month. He had no reason to doubt that there would not be the same returns this year. (Applause.)

The PURSER next gave "The Engineer," Mr. William West, of St. Blazey. He was not to be surpassed as an engineer, and he deserved great credit for his zeal and enterprise in keeping afloat the tin mine to the north of South Caradon—Phœnix. (Applause.)

Mr. WEST said he had been connected with South Caradon from the commencement, and he was glad to see, at the end of 40 years, that the dividends were now going up again, after such bad prices. Lately they had had to contend with a large quantity of water, and it afforded him much pleasure as the engineer, to report that the mine was in "fork." He believed that they had a very durable mine, and he considered that the agents were perfectly right in opening the ground. If they attempted to stop the pitwork they must stop the tribute. This had been the view he had always adopted with regard to Phœnix—(applause)—and all that was now wanting to make that mine pay well was a better price for tin. Miners were put off from time to time by the statement that they must wait for a change in the state of affairs in this or that country before they could get a higher price, and in a little time he believed a remedy would be found in smelting their own tin—(applause)—and he would willingly do so had he at his command the money which was possessed by some rich mines. They could now pay their way at Phœnix, but what he complained of was the shabby lot of lords that some tin mines in the eastern division of Cornwall had. Mines must be crippled before these lords would assist. A good example had been set in the West, where Mr. Basset, of Tehidy, unsolicited, had reduced the dues on mines on his land to 1-60th. That would encourage the speculators in their undertaking. Three years ago he was making in the Phœnix Mine double the price he was now getting for tin. Then he was making 88*l.* per ton, whilst on Monday last he sold from 130 to 140 tons of tin, which averaged about 42*l.* 10s. to 43*l.* per ton. He had not, however, attempted to stop an end, or a tutwork bargain in the mine, and his experience had been that if they stopped a level when it was poor it was a sure indication that the mine would soon be stopped altogether. (Applause.)

The PURSER gave "The health of Mr. Wm. Polkinghorn," who had long been identified with the mining interest, and who had recently taken up an important appointment at Liskeard.——Mr. POLKINGHORNE, in reply, remarked that some people said that Cornwall was nearly done up for minerals, but he believed that there was more mineral to be turned out the county than had been returned yet. (Hear, hear.) Some years ago, when connected with Fowey Consols, he prepared a synopsis showing the quantity of copper ore which had been raised and sold in Cornwall from 1800 up to that time. Taking the average for 50 or 60 years the annual value of the ore so raised was 1,000,000*l.* He was sorry to say that the amount had fallen off recently, and that now the average value was 300,000*l.* or 400,000*l.* But he believed that if the copper mines were vigorously worked they would do better, and that the average value of the produce would soon be raised. He did not believe that the price of tin would remain low, and he strongly advised all miners to keep up their tutwork.

Mr. RICHARD RABY proposed "The healths of the late Purser (Mr. T. Kittow) and the present holder of the office," highly eulogising Mr. Kittow for his efficient and valuable services; and expressing a belief that Mr. Dymond would follow in his footsteps.——Mr. DYMOND, in replying, said the mine was looking remarkably well, and the recent sale of one month's ores had realised over 4000*l.*, which if it were to be taken as any criterion of future events, could not be regarded in any than the most favourable light.—*Western Morning News.*

WEST SETON.—At the general meeting, on Tuesday (Mr. Thomas Pryor in the chair), the accounts for the 16 weeks to Dec. 2 showed a profit on the four months' working of 36*l.* 7s. 2d., reducing the debit balance to 4411*l.* 5s. 10d. The agents reported upon the various points of operation, and stated that there is about 1100*l.* worth of copper ore on the floors sampled last week which is not brought into the present account. The purser explained that 16 weeks' cost was charged against three sales of copper, or they would have shown over 1000*l.* profit. He and the manager would like to see the book clear, but the proposal to make a call did not emanate from them.—Mr. Rule said that at the last meeting it was suggested that so large a balance against the mine ought not to remain; he, therefore, proposed a call of 7*l.* per share, and was convinced that if they cleared off existing liabilities, and then paid cash within a month for their supplies, taking the regular discount of 2½ per cent., they would place the mine in a position second to no other mine in the county. He was thoroughly satisfied that they had a good mine in West Seton. At the end of the year they owed beyond what was charged in the accounts 600*l.* for merchants' bills and 1200*l.* for labour cost, to meet which they had 1100*l.* worth of copper ore on the floors and 800*l.* worth of tin in the roughs and leavings; they were, therefore, in a capital position. One bad system in connection with Cornish mining was that of leaving out merchants' bills and neglecting to charge up the labour costs, and he ventured to say that if ordinary tradesmen carried on their business as Cornish mining was carried on it was impossible that they could stand any length of time. He hoped the adventurers would adopt his motion, and pay off the debt, and then if they would only pay cash for their supplies he was satisfied that they would get them 10 per cent. cheaper than those mines which took twelve months' credit. He also believed that by making the call now they would have a dividend at the next meeting. The mines managed by the Messrs. Taylor who paid for the supplies every two months were a credit to the county; at Wheal Grenville, which was managed by a London committee, they did the same thing, and took the discount, and at Wheal Basset they paid cash for their coals and foundry materials, and took a discount of 5 per cent. That was an important item, and there was no reason why the same thing should not be done in West Seton and other mines. Some fear had been expressed that if they thus cleared off the debt Mr. Basset would consider that he ceased to be bound by his engagement to take 1-30th dues intsead of 1-18th, but he had sufficient confidence in that gentleman to be satisfied that he would not take more than 1-30th dues until the adventurers had received back the 4000*l.* which they were now about to put out of their pockets. He (Mr. Rule) proposed that the 7*l.* call be half payable in two months, and the balance on May 23.—Mr. Bolden said that if any application were made to Mr. Basset on behalf of the mine he would be quite ready to consider anything that might be laid before him, but with regard to the question of the dues, he did not think that the making of a call that day would make the slightest difference in Mr. Basset's intentions. He would consider the matter just in the same way as if no call was made at all. He (Mr. Bolden) did not believe that 1-18th dues would be reverted to simply because the adventurers were going to put their hands into their pockets to pay off the debt.—Mr. Rule stated that since the last meeting Capt. Josiah Thomas had imported a cargo of exceedingly good coal at 15s. 4d. per ton free on the mine; it was very little, if at all, inferior to the Portreath coal.—Amendments were proposed to make to make the call 5*l.* and 3*l.* respectively, but the last was not even seconded. The amendment for the 5*l.* call was only supported by one beside the mover and seconder, four voting against it, though 30 shareholders were present, and the 7*l.* call was then declared carried.

KILLIFRETH.—A four-monthly meeting of adventurers was held at the mine on Thursday, Mr. Tregoning, the purser, presiding. It appeared from the accounts that the debit balance now is 2384*l.* The purser further explained that they had charged 1100*l.* towards the stamps account, and but for the fact that they had been putting up new buildings, the call which they would require would have been a very insignificant one indeed. Capt. Googh added that during the last three months the mine had more than paid its costs. He also stated, in reply to Mr. Michell, that the original estimate of the cost of erecting the stamps, &c., was 2000*l.*, but they found now that it would be somewhat in excess of that amount. The work was being thoroughly well done, and they were as good a set of stamps as he had seen in the county. (Hear, hear.) If the weather was favourable they were ready to go to work within a week. Mr. Farley thought that if the expense did not exceed 3000*l.* they ought to be very well satisfied. Capt. Googh said the stamps would be put to work for less than 2500*l.* The purser mentioned that there were only four months' returns against five months' labour costs, and at the next account they would show a much more favourable balance-sheet. The accounts were passed, and a call of 5*s.* per share made. The agents stated that there are 40 men and eight boys employed underground at tutwork, and 25 men on tribute.

PORT PHILLIP AND COLONIAL GOLD MINING COMPANY.

The annual meeting of shareholders will be held on Thursday, when a report from the directors will be submitted. It states that the yield of gold for the past year, as compared with the year 1875, shows an increase of 5 grains per ton.

The average return of the quartz crushed for the past year gave 5 dwts. 4 grains, compared with 4 dwts. and 23 grains for the year 1875.

The gold obtained from the Chilian mills is 3 dwts. per ton better than the return for the preceding year.

The quartz crushed on joint account by the company was 37,569 tons for the year ending Oct. 11, 1876, being a decrease of 4787 tons as compared with the year 1875, and a decrease of 23,452 tons as compared with 1874.

In addition to the above 37,569 tons of quartz, there was crushed for tributors and others 9555 tons, making a total of 47,124 tons.

The produce of gold (including that from pyrites) during the year 1876 was 9701 ozs. 15 dwts., being a decrease as compared with 1875 of 814 ozs. 16 dwts.

The receipts and expenditure at the mine on the companies' joint account show a credit balance for the past year of 3360*l.* 10s. 3d., which (says Mr. Bland, writing on Oct. 30), bearing in mind the very unpromising state of things a few months since, may be considered satisfactory.

The average yield per ton of the quartz crushed from the commencement of the company's operations has been 7 dwts. 23½ grains upon 900,784 tons, and the total yield of gold for same time has been 359,090 ozs. 5 grains.

The total expenditure per ton of quartz raised and crushed during the past year was 19s. 4d., being an increase upon 1875 of 1s. 3½d. The mine costs were 14s. 8d. as against 12s. 5½d., and at the reduction works 4s. 8d., as against 5s. 7d. for the year 1875.

In remarking upon the increased mine costs, Mr. Bland says that it is due mainly to the great hardness of the ground in the deep levels and to the small size of the new eastern lode, which has taken three men to break out the same quantity of quartz that one man would do on the western lode.

The only special expenditure at the mine has been for a new spur-wheel and other fittings for the pumping-engine, and new fly-wheal for the winding-engine, which amounted to 318*l.*

The reserve fund, amounting to 5368*l.* 5s., is in Victoria Government Five per cent. Debentures.

There are no liabilities in England, and those in the colony are for Mr. Bland's salary and house rent (60*l.*), and the current working expenses. But as Mr. Bland had in the colony, on Oct. 30 last, a balance in hand of 1707*l.* 11s. 7d., it is not considered necessary to treat that 600*l.* as a liability on this side, and the directors recommend a dividend of 1s. per share, free of income tax.

As will be observed by the revenue account, the directors have abandoned the fees for 1874. They have taken 800*l.* for 1875, but only 500*l.* for 1876, in accordance with the views of the shareholders expressed at the last general meeting.

VICTORIA (LONDON) MINING COMPANY.

The annual meeting of shareholders will be held on Thursday, when the following report from the directors will be submitted:—

The investments of the company are represented by the sum of 7822*l.* 16s. 5d.

LONDON AND MELBOURNE COMPANY.—The working of the portion of this mine leased to the United Kingdom Extended Company has made but little progress during the past year, due to a great extent to financial difficulties. It is expected, however, that active operations will shortly be carried on, when satisfactory results are anticipated.

SOUTH CLUNES COMPANY.—The working of this mine during the past year has given very satisfactory results, and the appearance of the mine indicates a continuance of the present returns. The dividends received from this investment during the past year amounted to 3500*l.* Mr. Bland advised by last mail the purchase of 60 additional shares at 11*l.* each, which brings this company's interest up to 860 shares.

PRINCE OF WALES COMPANY.—As stated in the directors' last report this company is in difficulties, owing to an influx of water, caused by the abandonment of the adjoining mines The manager, in a letter dated July 31, 1876, states that at the time of such influx of water the company had just completed the sinking of the main No. 1 shaft to a depth of 700 feet, for the purpose of taking out quartz with more facility, and had nearly succeeded in opening up a payable lode 3 feet thick, with at least 300 feet of backs—a prospect of several years' remunerative work; but no means being found to overcome the water at reasonable cost, he was selling the machinery to pay the debts of the mine.

The investments in the company's books are as under:—					
South Clunes Company	£5655	12	5		
London and Melbourne Company	300	0	0		
Prince of Wales Company	1867	4	0	= £7822	16 5
Add capital in hand—On deposit	£1300	0	0		
—Current account	39	5	5		
	£1339	5	5		
Less bills payable—For South Clunes shares	660	0	0 =	679	5 5
Making a capital of				£8502	1 10
The dividends during the year were				£3500	0 0
Interest and registration fees				24	8 9
The company's expenses in the colony were				142	7 0
And in London				427	2 3
The financial position of the company on Jan. 1 was an under—					
In the banker's hands on current account	£802	8	8		
Bills receivable	600	0	0		
Petty cash	3	13	10		
	£1406	2	6		
But to be deducted from the above is a debit balance in the colony of	6	10	7 =	£1399	11 11

The directors recommended a dividend of 7½d. per share on the fully paid shares, and of 6d. per share on the partly paid-up shares, both free of income tax, making, with the distribution in August last of 10d. and 8d. per share respectively, a total dividend for the year of 1s. 5½d. on the fully paid and 1s. 2d. on the partly paid up shares.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

CWM DWYFOR MINING COMPANY (Limited).—Capital 20,000*l.*, in 1*l.* shares. To acquire from the Cwm Dwyfor Copper and Silver-Lead Mines Company (Limited), in liquidation, the mines and minerals, except slate and slate-rock, in part of the farm of Blaen-y-Pennant, parish of Llandinhangel-y-Pennant, Carnarvonshire, and all other property of the company. The subscribers (who take one share each) are—Charles Barton, J.P., Holbrook House, Somersetshire; Frederick Bellairs, Hounslow, no occupation; John Drane, 5, Clayland's-terrace, Clapham, clerk; John Maw, High-street, Stratford, cement and slate merchant; E. Parrett, Addiscombe, no occupation; J. Stewart, Sutton, Surrey, merchant; John Usher Taylor, Bedford, chemist. The directors are Messrs. Charles Barton, James Stewart, J. U. Taylor, J. R. Turnbull, and the Rev. Logan Logan. The qualification is the holding of 500 shares, and the remuneration is 250*l.* per annum to be divided, the amount to be increased to 350*l.* when 10*l.* per cent. dividend is paid, with an additional increase of 50*l.* for every increased dividend of 5 per cent.

CARDIGANSHIRE MINING COMPANY (Limited).—Capital 200*l.*, in 10*l.* shares. To acquire the Tan-yr-Allt Mines, in the parish of Llanfihangel-Genergleyn, Cardigan, belonging for a leasehold interest to the Tan-yr-Allt, Cardiganshire, Silver-lead Mining Company (Limited). The subscribers (who take one share each) are—James Stansfield, 10, Bush-lane, accountant; A. Burton, 7, Clive-terrace, New Cross, engineer; H. Stokes, Glandovey, mining engineer; G. Ingour, 17, Great Winchester-street, civil engineer; M. Petrie, Hanover Lodge, Kennington Park, Lieut.-Col.; H. B. Scott, Woodville, Lucan County, Dublin; A. J. Hughes, Aberystwith, solicitor. This company is registered without articles. The office is at 10, Bush-lane, Cannon-street.

CREDIT FONCIER TRANSFERRED ASSETS COMPANY (Limited)—Capital 300,000*l.*, in 1*l.* shares. To carry out an agreement for acquiring in exchange shares of the company a portion of the assets of the Credit Company (Limited), formerly called the Credit Foncier of England (Limited). The subscribers (who take one share each) are—Cecil Beadon, 21, Cromwell-crescent, W.; George Lee, four, 6, Cleveland Gardens; William Smith, Hatfield; J. McRae, Grove House, Croydon; E. J. Davis, Brookside, Haplefield, Surrey; J. Hume Webster, Upper Norwood; E. Andrew, College Park, Lewisham.

BIRMINGHAM AQUARIUM (Limited).—Capital 60,000*l.*, in 10*l.* shares. To establish an aquarium at Birmingham. The first seven subscribers are—Thos. Heslop, 21, Temple row, Birmingham, 15; Arthur Ryland, 7, Cannon-street, Birmingham, 25; C. T. Parson, 43, Ann street, Birmingham, 20; T. R. Tucker, Soho-road, Handsworth, 15; David Fair, Elm Lodge, Wellington-road, Handsworth, 15; Jas. Deykin, Edgbaston; S. A. Chation, 20, Temple-street, Birmingham, 30.

J. F. AND H. ROBERTS (Limited).—Capital 180,000*l.*, in 12*l.* shares. To take over the business of Messrs. J. F. and H. Roberts, of Portland-street, Manchester, merchants and manufacturers. The subscribers are—J. F. Roberts, Ashfield, Manchester, 1500; Hugh Roberts, Oakhurst, Alderley Edge, 1500; J. W. Roberts, Ashfield, 50; Hugh Pierey, Greenhays, Manchester, 50; C. Rickardson, 9, Darlington-street, Cheetham Hill, 50; W. Burgess, 31, Coke-street, Cheetham Hill, 30; J. T. Fawcett, 2, Portman-street, Manchester, 10. The purchase consideration for the business is 98,768*l.*

BARGOED GAS AND WATER COMPANY (Limited).—Capital 20,000*l.*, in 10*l.* shares. To supply gas and water to Bargoed, Glamorgan. The subscribers are—Frank James, Merthyr Tydfil, 50; John Llewellyn, Bargoed, 6; D. Phillips, Givrarhargoed, 10; E. Lewis, Bargoed, 10; D. Abraham, Bargoed, 10; C. H. James, Merthyr Tydfil, 50; Thomas Jones, Bargoed, 2.

COLCHESTER AND WIVENHOE MUTUAL MARINE INSURANCE ASSOCIATION.—This company is "limited by guarantee," the object being the mutual insurance of ships.

SCANDINAVIAN TRADING COMPANY (Limited).—Capital 10,000*l.*, in 1*l.* shares. To carry on business and acquire property in Sweden, Norway, and Iceland. The subscribers (who take one share each) are—Alfred Macdonald, 2, Guilford street: G. F. Jones, 22, Great St. Helens; H. O. Carnegy, Lowden-road, Brixton; W. D. Winn, 1, Dane's Inn, W.C.; V. H. Carlasson, 5, Hyde-street, South Kensington: G. M. De La Noye, 72, Thistle-grove, South Kensington; George Nolan, 85, Gracechurch street.

"PAPER" WHEELS FOR RAILWAYS.—So-called paper wheels for railway carriages have been tried for a considerable time in America. One of the first made was exhibited at the Philadelphia Exhibition after running over 300,000 miles under a Pullman car, without requiring the tyre to be turned. These wheels have steel tyres made with an inside flange and cast-iron boss. On each side of the boss and tyre wrought-iron or steel plates, 3-16 in. thick, are bolted, and the space between the plates is filled with compressed paper. The paper is made of straw boards, ½ in. thick, pasted together with paste made of rye flour. These are subjected to a pressure of about 400 tons for about 5 hours, and are then dried with heated air. These sections are then pasted together in the same way, so as to get the requisite thickness—about 3¼ in.— and they are again pressed and dried. They thus form a disc, which is turned off, and the tyre forced on with a pressure of about 200 tons. The plates are then bolted to the inside and outside of the wheel with ¾-in. bolts.

IMPROVED TURBINE.—With a view to increase the percentage of power and render the wheel more effective Mr. S. M. SMITH, of York, Pennsylvania, proposed to incline the plane of the buckets in the direction of the movement of the wheel, and curving them reversely to the usual direction, so that the water shall strike the convex portion of the bucket. This form of bucket throws the water well out to the periphery, where it exerts the best leverage upon the wheel, while the curve and vertical inclination of the buckets being in the direction of the movement of the wheel, the buckets simply present a sharp edge in entering the streams of water, and do not involve the back lash and loss of power produced by the resisting surfaces which the back of the buckets curved in the usual form affords.

HOLLOWAY'S OINTMENT AND PILLS.—The finest remedies in the world for bad legs, old wounds, sores, and ulcers. If used according to directions given with them there is no wound, bad leg, or ulcerous sore, however obstinate or long standing, but will yield to their healing and curative properties. Numbers of persons who have been patients in several of the large hospitals and under the care of eminent surgeons, without deriving the slightest benefit, have been thoroughly cured by Holloway's ointment and pills. For glandular swellings, tumours, scurvy, and diseases of the skin there is no medicine that can be used with so good an effect. In fact, in the worst forms of disease, dependent upon the condition of the blood, these medicines, if used conjointly, are irresistible.

FOREIGN MINING AND METALLURGY.

There is little new to note in connection with the French iron trade. No fresh large contracts are reported, and the small sales concluded from day to day have been effected at about former rates. In the Nord the forges have a few orders. In the Nancy district affairs have somewhat slackened; refining pig has been quoted in the Nancy district at about 2*l.* 10*s.* per ton. At Paris the iron market has been well maintained, in consequence of the very considerable activity which the building trade has acquired; so great is this activity that at some points working operations are now being carried on at night with the aid of the electric light. The mild weather which has prevailed has exercised an adverse influence upon the coal market, but it has been favourable to building works, and the iron trade has benefited accordingly in the French capital. The Creusot Works, notwithstanding the hardness of the times, have just inaugurated a liberal policy. Thus the workmen have received a notice to the effect that in future the pension fund will be supported by the administration, and not by deductions from the wages paid. Creusot would thus appear to have suffered less than its neighbours from the present crisis in affairs.

The task of reporting the Belgian coal trade is very difficult, in consequence of the prevailing dearth of news, there being so little doing. The fall in prices is becoming more and more confirmed, wages are falling, and the extraction is being reduced. Neither industrial coal nor coal for domestic consumption has sold freely in Belgium of late. This is due to the fact that the Belgian iron trade has comparatively few orders on hand, while the weather has been very mild. The General Company for Promoting the National Industry of Belgium, which is largely interested in collieries, has announced a dividend for 1876 at the rate of 4*l.* 4*s.* per share.

The state of the French coal trade is described as worse than ever. Prices are almost continually falling, and concessions made secretly in the evening of one day are announced semi-officially the next morning. Stocks exist everywhere: they have accumulated in the trucks of the Northern of France Railway Company, in canal boats, in the yards of La Chapelle, everywhere except among consumers. The weather has become very mild, and at Paris the domestic consumption is almost *nil*. In the basin of the Loire the consumption is comparatively small and feeble, but it is, nevertheless, pretty well sustained, being assisted by the fact that the metallurgical interest does not exactly want for work in this part of France. Prices are accordingly better supported in the basin of the Loire than they are in other districts, at the same time they are still low; on the other hand, the exports are declining, they especially are excessively weak.

The situation does not improve in the Belgian iron trade; in fact, the state of affairs becomes more and more difficult. Although orders were very scarce a few months since they have a tendency to still further decline in importance, and several of the Belgian metallurgical establishments are in almost total want of work. It was recently announced that the Jupille Rolling Mills Company was about to suspend working operations, and this fact has now been realised. The Jupille works have for some time past produced large quantities of plates, but the demand is not now of sufficient importance to assure an outlet for the whole of the company's production. This check is expected to prove rather advantageous to the Espérance Forges Company; should this prove to be the case it will be quite an exceptional result, as for the most part companies are only working for the purpose of keeping together the staff whose services they may require when a revival occurs in business. Prices are nowhere very remunerative, or even commonly remunerative, and the number of workpeople without employment is so considerable that good men may be seen offering their services from day to day without much regard to the wages promiseed to them. Reductions in wages are also very much the order of the day. Thus at Charleroi the highest "compensations" are being cut down about 5 per cent, while the smaller ones are being curtailed to the extent of 2 or 3 per cent. At Liége the reductions agreed to are even more important; they often amount to from 15 to 20 per cent., and they are accepted without objection, the working classes showing themselves very reasonable in the matter. We announced recently that the Belgian Railway Plant Company had obtained an order for a bridge for Russia, but it appears that the order has been taken on South American account. This order has been secured by a syndicate recently formed at Liége. This syndicate is composed of a limited number of industrials, who share with each other the orders which they obtain. Eight lots of wagons—each lot comprising 25 to 50 trucks—have been let in Belgium at an average of 57*l.* 3*s.* per truck. Almost all the makers of trucks in Belgium took part in the competition, and the tenders presented very few differences in prices; this is considered to show that makers are prepared to work without much regard to profit. The Austro-Belgian Metallurgical Company realised a net profit of 12,011*l.* in 1875-76.

COPPER ORES.

Sampled Jan. 3, and sold at the Royal Hotel, Truro, Jan. 18.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Devon Great Consols...	89	£6 2 6	Glasgow Caradon	72	£4 7 6
ditto	87	2 9 6	ditto	70	4 4 6
ditto	86	2 6 0	ditto	25	2 14 6
ditto	85	2 10 0	Holmbush	117	0 2 0
ditto	80	5 15 6	ditto	79	0 15 0
ditto	79	2 16 0	ditto	34	2 19 0
ditto	78	2 19 6	Brookwood	70	2 1 0
ditto	76	2 12 0	ditto	51	2 13 6
ditto	65	5 18 6	ditto	50	7 8 6
ditto	49	2 13 0	ditto	49	2 8 6
ditto	42	2 4 0	Wheal Crebor	81	3 4 0
ditto	5	29 10 6	ditto	73	3 4 0
South Caradon	90	9 1 6	ditto	51	2 14 6
ditto	69	4 13 6	Coombe Works Ore	114	1 2 6
ditto	67	4 10 6	ditto	16	2 7 0
ditto	52	4 14 0	East Caradon	65	4 15 6
ditto	51	11 5 6	ditto	31	4 9 0
ditto	50	18 4 0	ditto	29	5 17 6
ditto	47	9 10 6	Hingston Down	75	2 15 6
ditto	44	5 15 0	ditto	47	2 7 6
Marke Valley	85	3 4 6	Bedford United	71	3 17 6
ditto	70	2 17 6	ditto	47	3 17 6
ditto	58	2 6 6	Prince of Wales	51	2 12 0
ditto	57	2 15 6	ditto	49	2 6 0
ditto	43	3 11 0	West Maria & Fortescue	56	2 3 6
ditto	31	4 19 6	ditto	36	3 10 6
ditto	27	4 5 0	Killifreth	41	10 1 0
Gunnislake (Clitters)	83	4 16 6	ditto	19	4 16 6
ditto	82	4 15 6	Wheal Emma	38	3 2 0
ditto	77	4 16 6	Belstone	25	6 8 0
ditto	72	4 7 6	Wheal Friendship	18	3 0 6
Glasgow Caradon	73	4 13 6			

TOTAL PRODUCE.

Devon Great Con.	821	£3038 12 0	East Caradon	125	£ 618 14 0
South Caradon	470	3872 12 0	Hingston Down	122	319 15 0
Marke Valley	371	1190 0 6	Bedford United	118	457 5 0
Gunnislake (Clit.)	314	1478 11 0	Prince of Wales	100	245 6 0
Glasgow Caradon	240	1020 3 0	West Maria, &c.	92	248 14 0
Holmbush	230	171 5 0	Killifreth	60	503 14 6
Brookwood	220	770 0 0	Wheal Emma	38	117 16 0
Wheal Crebor	204	628 11 6	Belstone	25	160 0 0
Coombe Works	130	165 17 0	Wheal Friendship	18	54 9 0

Average standard ..... £104 10 0 | Average produce 6½
Average price per ton £4 1 6
Quantity of ore ..... 3698 | Quantity of fine copper 241 tons 8 cwts.
Amount of money £15,061 5 6

LAST SALE.—Average standard ..... £103 0 0 | Average produce 7
Standard of corresponding sale last month, £106 6 0—Produce, 6¼

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Vivian and Sons	1120 5-6	£4651 11 7
Nevill, Druce, and Co.	740	1775 6 0
Williams, Foster, and Co.	1191½	4549 0 10
Charles J. Lambert	328 5-6	1114 14 1
Sweetland, Tuttle, and Co.	317	2970 13 0
Total	3698	£15,061 5 6

TO SALE on Thursday last, January 25.

Copper ores for sale at Tabb's Hotel, Redruth, on Thursday next—Mines and Produce.—West Tolgus 269—West Seton 220—South Crofty 117—Levant 115—East Wheal Basset 76—Botallack 50—Carn Brea 45—Penstruthal 44—Unity Treugh Wood 9—West Godolphin 5—New Rosewarne 3—Burra Burra 3—Phillack Ore 2.—Total, 1224 tons.

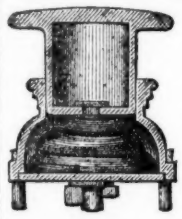
DETONATORS
FOR DYNAMITE, GUN COTTON, GUNPOWDER, &c.,
OF THE BEST QUALITY AND STRONGEST POWER,
DELIVERED FREE IN LONDON.
For prices, terms, and full particulars, address—
MESSRS. BRAUN AND BLOEM,
85, GRACECHURCH STREET, E.C.

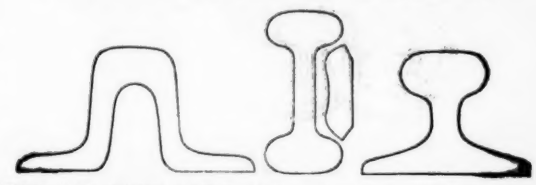
GUIBAL VENTILATORS
FOR COLLIERIES, MINES, &c.
P. HAGGIE AND CO.
MANUFACTURERS, GATESHEAD-ON-TYNE.
Sizes in hand and delivered, comprising all the RECENT IMPROVEMENTS the Ventilators, and highly finished VARIABLE EXPANSIVE ENGINES, 16, 20, 21, 24, 30, 36, 40 feet, and upwards, in diameter.
DETAILED ESTIMATES ON APPLICATION.
ALSO,
GENERAL COLLIERY ENGINEERING,
HAULING AND WINDING ENGINES,
SAW MILL MACHINERY, &c.
AGENT:
MR. D. P. MORISON, M. AND C.E.,
No. 21, COLLINGWOOD STREET, NEWCASTLE-ON-TYNE; and
ST. STEPHEN'S CHAMBERS, WESTMINSTER, LONDON.

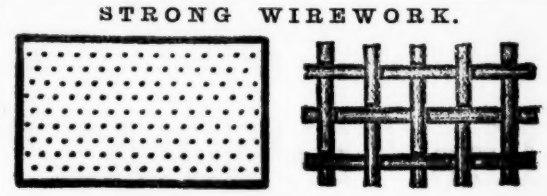
BICKFORD'S PATENT SAFETY FUSE,
FOR CONVEYING FIRE TO THE
CHARGE IN BLASTING ROCKS, &c.
Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862 and 1874, in London; at the "IMPERIAL EXPOSITION," held in Paris, in 1855; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Altona, in 1869: TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna, in 1873; and at the "EXPOSICION NACIONAL ARGENTINA," Cordova, South America, 1872.

BICKFORD, SMITH AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—
EVERY COIL of FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH the COLUMN of GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS as THEIR TRADE MARK.

BENNETTS' SAFETY FUSE WORKS,
ROSKEAR, CAMBORNE, CORNWALL.
BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES,
Suitable for wet or dry ground, and effective in Tropical or Polar Climates.
W. BENNETTS, having had many years experience as chief engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of his own manufacture, of best quality, and at moderate prices.
Price Lists and Sample Cards may be had on application at the above address.
LONDON OFFICE,—H. HUGHES, Esq., 85, GRACECHURCH STREET.

THOMAS TURTON AND SONS,

MANUFACTURERS OF
CAST STEEL for PUNCHES, TAPS, and DIES
TURNING TOOLS, CHISELS, &c.
CAST STEEL PISTON RODS, CRANK PINS, CONNECTING RODS, STRAIGHT and CRANK
AXLES, SHAFTS and
FORGINGS of EVERY DESCRIPTION.
DOUBLE SHEAR STEEL, BLISTER STEEL, SPRING STEEL, GERMAN STEEL,
FILES MARKED T. TURTON
EDGE TOOLS MARKED WM. GREAVES & SON
Locomotive Engine, Railway Carriage and Wagon Springs and Buffers.
SHEAF WORKS AND SPRING WORKS, SHEFFIELD.
LONDON WAREHOUSE, 35, QUEEN STREET, CANNON STREET, CITY, E.C.
Where the largest stock of steel, files, tools, &c., may be selected from.

JOHN BEATSON, DERBY.

IRON AND STEEL RAILS, of all sections, from 10 to 82 lbs. per yard, new, defective, or second-hand.
POINTS AND CROSSINGS, FISH PLATES, BOLTS, NUTS, CHAIRS, AND SPIKES.
LOCOMOTIVE ENGINES AND MACHINERY.
MALLEABLE AND PIG-IRON OF ALL KINDS.

STRONG WIREWORK.

STRONG WIREWORK, the cross wires equally bent; also BEST STAMP GRATES, both of iron and copper, and punched copper plates. DITTO TUBBED. All the above promptly supplied at
W. ESCOTT'S MINING MATERIAL DEPOT,
TAVISTOCK, DEVON.
FOREIGN ORDERS PROMPTLY EXECUTED.

THE TAVISTOCK IRONWORKS, ENGINEWORKS FOUNDRY, AND HAMMER MILLS,
TAVISTOCK, DEVON.
NICHOLLS MATHEWS, AND CO.,
ENGINEERS, BRASS AND IRON FOUNDERS,
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MAKERS OF
CORNISH PUMPING, WINDING, AND STAMPING ENGINES; STEAM CAPSTANS AND CRUSHERS; WATER-WHEELS; PUMP-WORK; SHOVELS, AND HAMMERED IRON FORGINGS OF EVERY DESCRIPTION.
Also of SPUR, MORTICE, MITRE, BEVIL, and other WHEELS, of any diameter up to 12 feet, made by Scott's Patent Moulding Machine, without the aid of patterns, and with an accuracy unattainable by any other means.
MACHINERY or FOREIGN MINES carefully prepared.
SECONDHAND MINING MACHINERY, in good conditon, always on sale at moderate prices.

PARR'S LIFE PILLS
MAY BE USED WITH CONFIDENCE by persons suffering from headache, indigestion, pain under the shoulder, bilious ailments, scorbutic complaints, affections of the nervous system, lowness of spirits, want of sleep, &c.—Sold by all chemists.

Works published at the MINING JOURNAL *office, Fleet-street, London*
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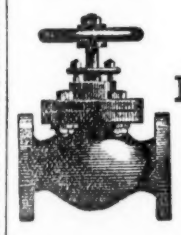
ARTESIAN BORINGS,
For WATER SUPPLY to TOWNS, LAND IRRIGATION, and MINERAL EXPLORATIONS, may be executed of any diameter, from 6 in. to 36 in., and to any depth to 2000 ft.,
Pistons & Air-pump Buckets fitted with Patent Elastic Metallic Packing
of which upwards of 8684 have been made to March, 1875.

MATHER AND PLATT,
MAKERS OF LARGE PUMPS AND PUMPING ENGINES.
Improved Valves and Taps for Water, Steam, Gas, &c.
PATENT STEAM EARTH-BORING MACHINE
ENGINEERS and MACHINE MAKERS to CALICO PRINTERS, BLEACHERS, DYERS, and FINISHERS.
SALFORD IRONWORKS, MANCHESTER.
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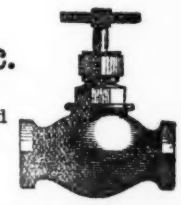

THE "CRANSTON" ROCK DRILL
SUITABLE FOR
QUARRYING, SINKING SHAFTS, SUBMARINE BLASTING, TUNNELLING, DRIVING ADITS,
Is the MOST SIMPLE and ECONOMICAL DRILL now in use.
BOILERS; AIR COMPRESSORS, worked by Hydraulic or Steam-power; STEEL for MINING DRILLS; PUMPING, and all other MINING MACHINERY supplied.
For Prices, Estimates, and other Particulars, apply to—
J. G. CRANSTON, 22, GREY STREET,
NEWCASTLE-ON-TYNE.
MR. TAIT, Manager, East Hetton Quarry Company's Works, Coxhoe, Durham, writing on May 12, 1876, says—"I have pleasure in testifying to the value of your Rock Drills. The two you supplied us with about six months ago are giving us entire satisfaction. The cost of drilling by machine is less THAN ONE-FOURTH THAT OF DRILLING BY HAND. By the use of the Drills we have been able very greatly to increase the out-put of stone without increasing the number of men employed."

JEWELS, PLATE, AND VALUABLES
May be DEPOSITED for SAFE CUSTODY in the Fire and Burglar-proof Vaults of the
NATIONAL SAFE DEPOSIT COMPANY,
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Apply to H. WEST, Esq., Manager, 1, Queen Victoria-street, Mansion House.

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TANGYE BROTHERS AND HOLMAN,

10, LAURENCE POUNTNEY LANE, LONDON, E.C.,

AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

The "SPECIAL" DIRECT-ACTING STEAM PUMP

WITH

Holman's Patent Self-acting Exhaust Steam Condensers.

UPWARDS OF 12,000 "SPECIAL" STEAM PUMPS ARE IN USE.

After eight years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once the simplest and most certain in action. There is absolutely no extraneous gear, and the steam cylinder is *no longer than the pump*. The valves are of easy access, and are suited for pumping fluids and semi-fluids of almost any consistency.

Holman's Condenser

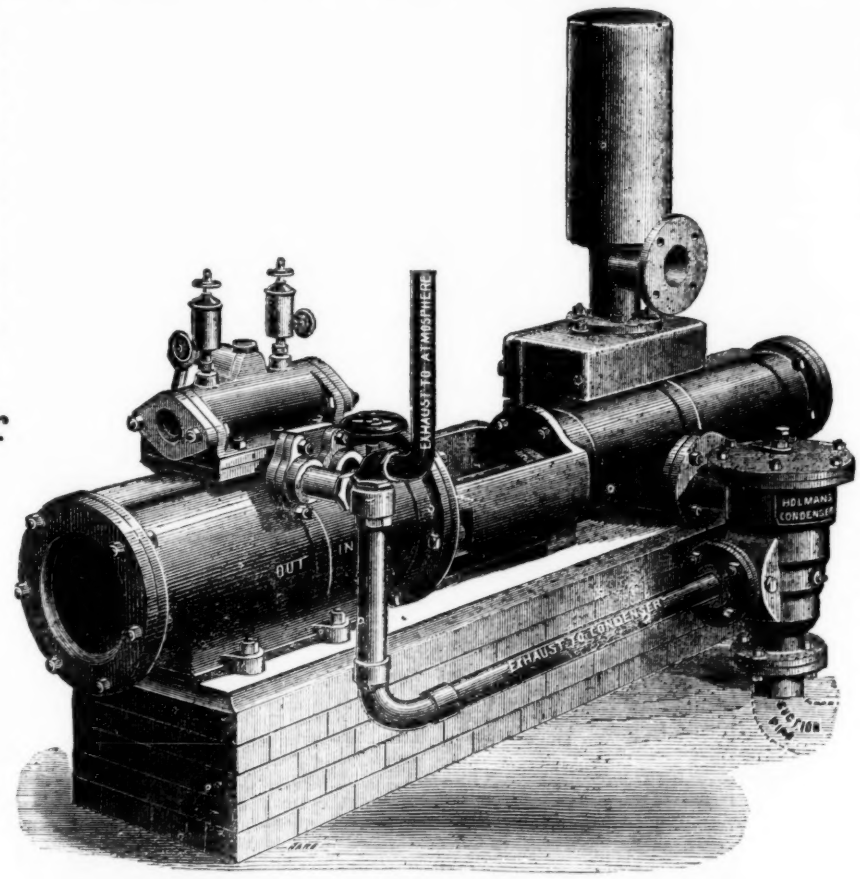
TURNS WASTE STEAM INTO GREAT POWER.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

SAVES TWENTY TO FIFTY PER CENT. OF FUEL.



WILLIAM ELLIOT, Esq., *of the Weardale Iron and Coal Company, writes under date Sept.* 17th, 1875, *as follows:*—"We have now THIRTY-FIVE of your SPECIAL STEAM PUMPS in operation at the various collieries under my charge—some of them employed pumping water out of our pits to the depth of 50 fms.—others employed in the pits, and a good many feeding Boilers. I have no hesitation in saying that we have found them the Cheapest and Best Pumps of the kind we have tried. I can with confidence recommend them to intending purchasers."

Messrs. BURT, BOULTON, and HAYWOOD, *Chemical Manufacturers, of London,* have FORTY of the "SPECIAL" STEAM PUMPS in use at their works, and continue to order more.

HOLMAN'S CONDENSERS

Are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine and effecting a saving in fuel of from 20 to 30 per cent.

In Mining operations these Condensers will be of great value.

All Boiler Feeders are recommended to be fitted with these Condensers, as not only is the exhaust steam utilised in heating the feed water, but is returned with it into the boiler.

GREAT REDUCTION IN PRICES.

The following sizes are suitable for low and medium lifts :—

Diameter of Steam Cylinder ...In.	3	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10
Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	5
Length of Stroke .....In.	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,500	5070
Price of Special Pump ...£	**16**	**18**	**20**	**25**	**22 10**	**27 10**	**32 10**	**25**	**30**	**35**	**40**	**30**	**35**	**40**	**45**	**50**	**40**	**45**	**50**	**55**	**65**	**50**	**55**	**60**	**70**	**85**	**55**
Price, fitted with Holman's Condenser and Blow-through Valve	£23	£25	£29	£36	£31	£39	£45	£34	£42	£50	£55	£40	£48	£55	£61	£72	£53	£61	£66	£78	£87	£66	£71	£83	£94	£120	£72

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18			
Diameter of Water Cylinder..In	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12			
Length of Stroke .....In	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000			
Price of Special Pump..£	**55**	**75**	**90**	**100**	**75**	**80**	**85**	**110**	**120**	**140**	**110**	**120**	**130**	**140**	**160**	**180**	**140**	**150**	**160**	**180**	**200**	**180**	**190**	**210**			
Price, fitted with Holman's Condenser and Blow-through Valve	£88	£99	£125	£135	£95	£107	£112	£148	£158	£190	£138	£148	£170	£180	£215	£235	£168	£190	£200	£235	£255	£225	£235	£226			

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pump can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36 48 and 72-inch Stroke.

The following Testimonial gives one Example of the Power Gained by the action of Holman's Patent Condensers:—

MORLEY COLLIERY, WIGAN.

MESSRS. TANGYE BROTHERS AND HOLMAN.

GENTLEMEN,—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economical sense, a most valuable feature in the drainage of underground workings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10¾ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (168 feet) per minute, the steam gauge indicating a steam pressure of 36 lbs. per square inch, 80 yards from the Pump and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21¼ inches, I turned the exhaust steam from the Condenser into the atmosphere, when the speed at once fell to 44 strokes per minute. The work economy thus shown is really so great that the cost of the Condenser must be saved in a very short time. (Signed) J. THOMPSON.

NORTH OF ENGLAND HOUSE ... ... TANGYE BROTHERS AND RAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
SOUTH WALES HOUSE... ... ... TANGYE BROTHERS AND STEEL. Tredegar Place. NEWPORT. Mon.; and Oxford Buildings, SWANSEA.

BLAKE'S PATENT STEAM PUMP.

MORE THAN 10,000 IN USE.

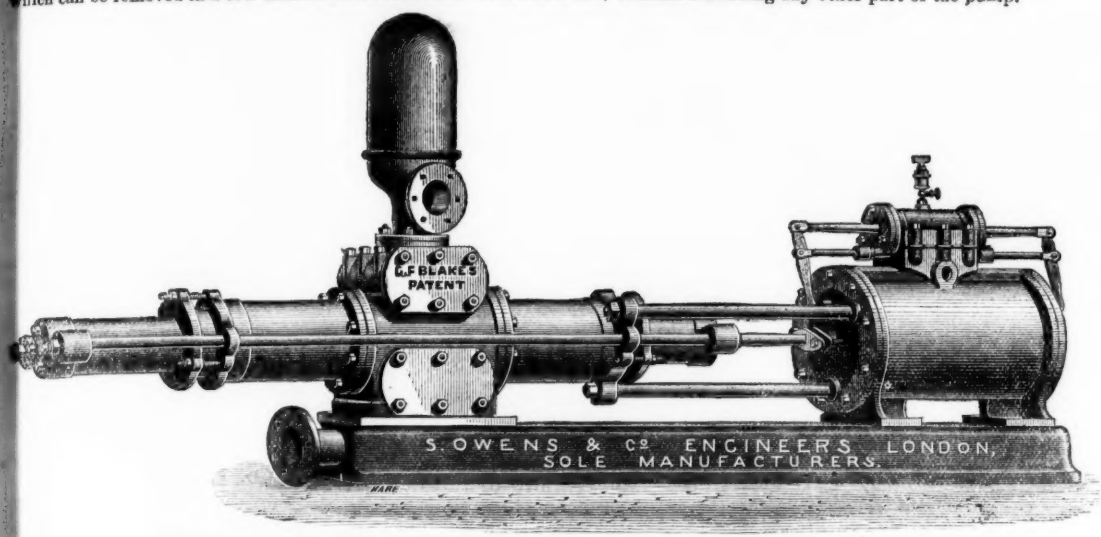
SOLE MAKERS FOR GREAT BRITAIN,

S. OWENS & CO.,

Hydraulic and General Engineers, Whitefriars-street, London;

And at 195, Buchanan-street, Glasgow (W. HUME, AGENT).

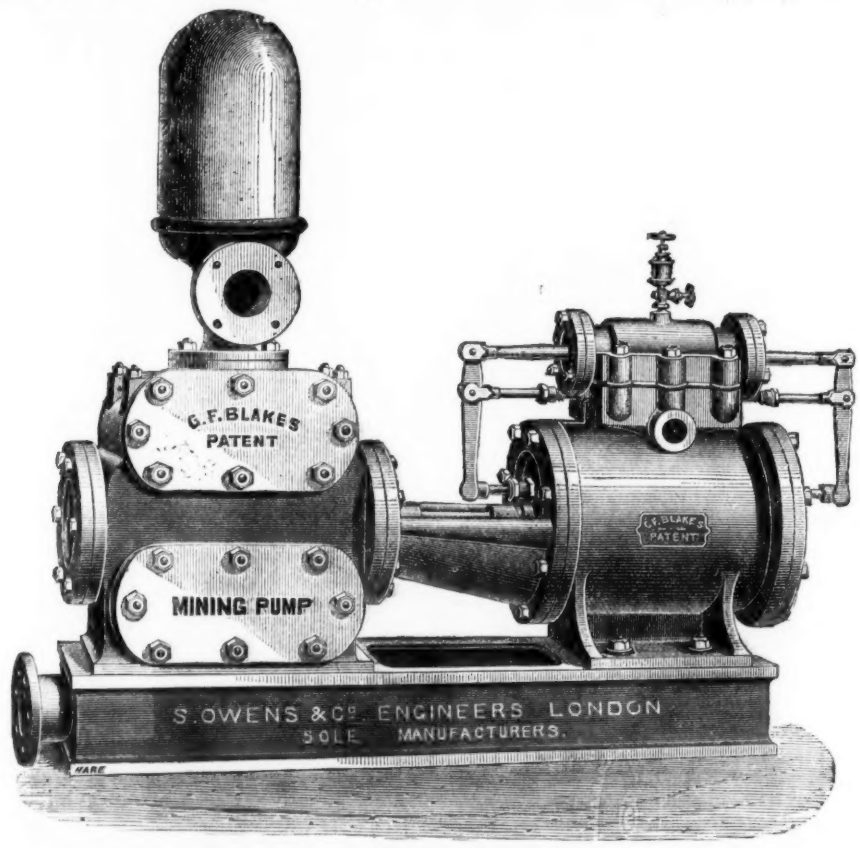
These PUMPS from their SIMPLICITY, RELIABILITY, DURABILITY, and ECONOMY are SPECIALLY SUITED FOR MINING PURPOSES, where large quantities of water require to be raised from great or medium depths with CERTAINTY. They are double-action in their construction, throwing a constant stream of water, can be made of any stroke to suit the space in which they have to work, can be arranged with any combination of steam and water cylinders to suit the pressure and lift against which it is desired to work them, are made of the very best materials and highest class of workmanship, and all working parts can be readily got at by any ordinary workman, and replaced if necessary by a duplicate part (all such being interchangeable) in the shortest possible time. For situations where gritty and sandy water has to be pumped the DOUBLE-PLUNGER PATTERN is recommended. Where space is limited the PISTON PUMP is better suited, a novel feature of which is the PATENT REMOVEABLE LINING, which can be removed in a few minutes and substituted with a new one, without disturbing any other part of the pump.



Blake's Improved Double-plunger Steam Pump.

S. OWENS AND CO.,

In placing the BLAKE STEAM PUMP before the mining world, believe they are offering the BEST, MOST RELIABLE, and ECONOMICAL PUMP that has yet been made, and solicit an inspection of various sizes in operation at their works, Whitefriars-street, Fleet-street, London.



Blake's Improved Mining Pump, with Patent Removeable Lining to Pump Cylinder,

Any combination of these Pumps may be had to suit circumstances. The following are some of the SIZES SUITABLE FOR MINING PURPOSES:—

Dia. of steam cylinders.. In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders.. In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke ... ... In.	18	18	18	24	24	24	24	24	24	24	24	24	30	30	30	30	30	36	36	36	42
No. of strokes per minute..	30	30	30	30	25	25	25	22	22	22	22	22	22	22	22	20	20	17	17	17	15
Quantity in gallons per hour, approxmately ...	1440	2610	4200	5940	2940	4620	6600	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	12000

PRICES FOR THE ABOVE, OR ANY SPECIAL SIZE, AND ILLUSTRATED CATALOGUES FURNISHED ON APPLICATION

PATENT CONDENSERS

Can be supplied for any size pump to effect a saving of fully 30 per cent. in the consumption of fuel, greatly increasing their efficiency

The Blake Pump will work under water, and as efficiently with compressed air as with steam.

BLAKE'S DONKEY PUMPS FOR FEEDING BOILERS KEPT IN STOCK.

MINERS

PRICKERS AND STEMMERS

OF

MUNTZ'S METAL.

ACCORDING TO THE NEW MINES REGULATION ACT.

BEST KNOWN MATERIAL.

MUTZ'S METAL COMPANY (LIMITED),

FRENCH WALLS,

NEAR BIRMINGHAM

SOLID DRAWN BRASS BOILER TUBES

FOR LOCOMOTIVE AND MARINE BOILERS,

EITHER

MUNTZ'S OR GREEN'S PROCESS

MUNTZ'S METAL COMPANY (LIMITED),

FRENCH WALLS,

NEAR BIRMINGHAM.

MINERS' LAMP

AND

GAUZE MANUFACTORY,

Established Half-a-century.

JOSH. COOKE AND CO. J.C.B. TRADE MARK

SAFETY LAMPS

MADE to DRAWING, DESCRIPTION, or MODEL. Illustrated Price Lists free, by post or otherwise.

VALUABLE TESTIMONIALS FROM EMINENT FIRMS.

MIDLAND DAVY LAMP WORKS,

BELMONT PASSAGE, LAWLEY STREET,

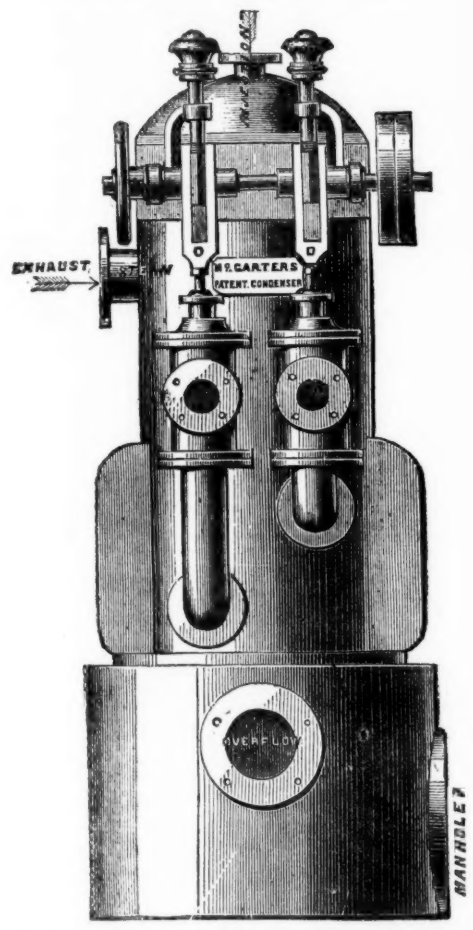
BIRMINGHAM.

LICENSED MAKERS.

KIRK, RAMSDEN, AND CO.

(LIMITED)

HUDDERSFIELD.



These Condensers can be placed inside or outside of the engine-house. They draw their own injection water, and require no foundation. Specially adapted to Pumping and Winding Engines, effecting a saving from 20 to 30 per cent. in coal, and increases the power of the Engine.

Engineers, Millwrights, Founders,

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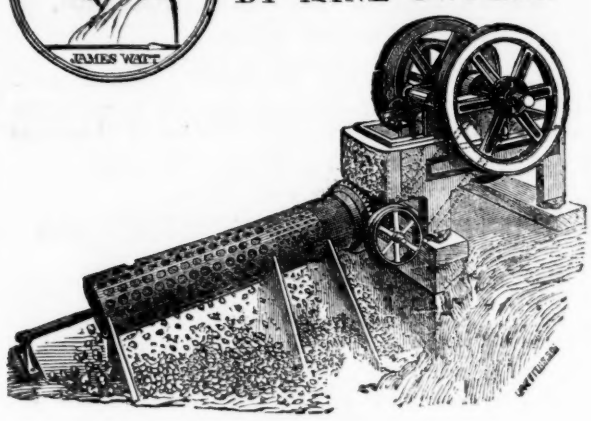

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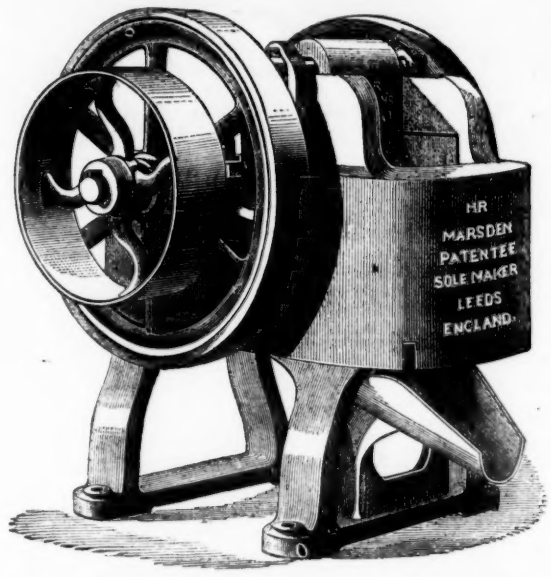

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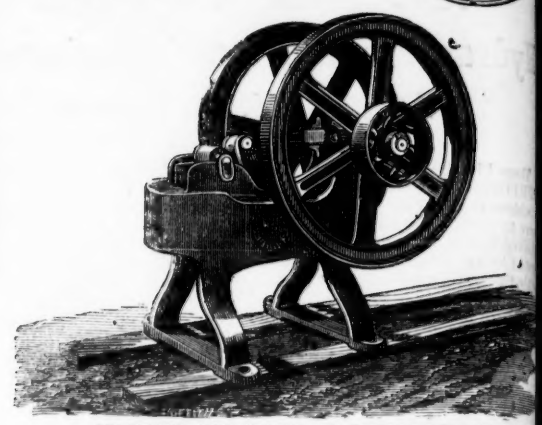

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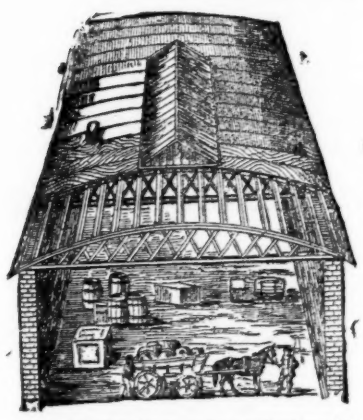

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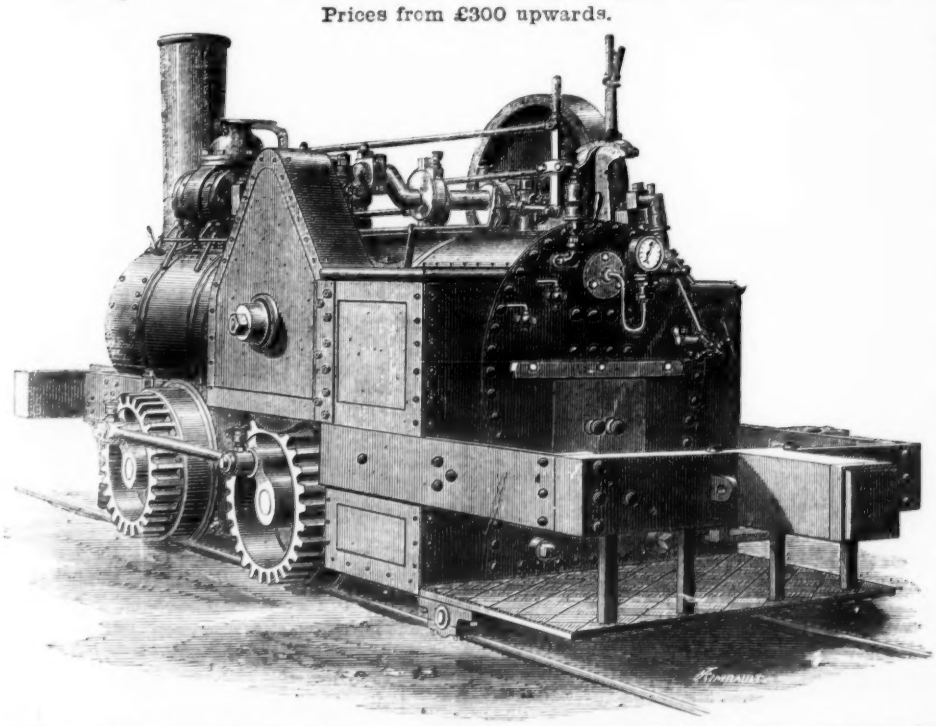

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